"IT'S EASIER TO UNDERSTAND": THE EFFECT OF A SPEAKER'S ACCENT, VISUAL CUES, AND BACKGROUND KNOWLEDGE ON LISTENING COMPREHENSION

by

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Abstract

The increasing number of non-native English-speaking instructors in American universities constitutes an issue of controversial debate, concerning the interaction of native English-speaking students and non-native English speaking instructors. This study investigated the effects of native or non-native speakers and audiovisual or audio-only lecture mode on English native speakers' comprehension and memory for information from a classroom lecture, measuring both factual memory and strength of pragmatic inferences drawn from the text. College students (N = 130) were tested on their comprehension of information derived from basic entomology lectures given by both an English native speaker and an English non-native speaker GTA. Participants also evaluated both lecturers in terms of communication skills. Results indicated that participants evaluated the native speaker as having better communication skills, which is in accordance with previous studies suggesting that both the difficulty of understanding non-native-accented speech (Reddington, 2008) and the possibility of prejudice triggered when listeners hear a non-native accent (Bresnahan et al., 2002) influence listeners' evaluations of English non-native speaker instructors. Results revealed that familiarity with the topic also played an important role in listening comprehension, especially for lectures given by the non-native speaker. Likewise, the access to visual cues (gestures and facial expressions) enhanced understanding, but it was not a pre-requisite for adequate comprehension when the topic of the lectures did not require visual information. These findings were consistent with the polystemic speech perception approach (Hawkins, 2003), in that it is not essential to recognize all words in text in order to make connections with previous knowledge and construct meaning. Furthermore, overall participants took longer to answer questions from lectures given by the non-

native speaker than by the native speaker. This suggests that non-native-accented speech may require more time to answer questions related to that speech, although listeners can adapt to it quickly (Derwing, 1995). Findings from this study are important in suggesting tools for thinking about how different aspects of a lecture can contribute to the learning process. Implications for further research are addressed.

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CHAPTER 1 - Introduction

Polystemic Speech Perception, a conceptual approach

There is an increasing interest in listening comprehension, as communicative language teaching continues to develop (Rost, 2002; Sadighi & Zhare, 2006; Schmidt-Rinehart, 1994). Listening has been considered, like reading, as an active process of interpretation that goes beyond the simple decoding of the signal. In addition, its major purpose is the construction of meaning (Rost, 2002) by matching what listeners hear with what they already know. From this perspective, in this study, listening comprehension is considered as "an active process in which individuals focus on selected aspects of aural input, construct meaning from passages, and relate what they hear to existing knowledge." (O'Malley, Chamot, & Küpper, 1989, p. 418). That being said, in the present study, the interest in listening comprehension is understood as connected with memory, in that, in order to understand an oral message, there are four processes involved, as proposed by Clark and Clark (1977): 1) firstly, the listener holds the information from the speech in short-term memory; 2) then, there is a tentative identification of the components of the content of the speech; 3) next, components are grouped in order to compose a coherent message; 4) finally, the propositional meanings can be stored in long-term memory[1]. Therefore, the study of listening comprehension of academic lectures goes beyond word recognition, because what really matters should be the discourse understanding of the message, not merely the recognition of all single words spoken by the lecturer.

[1] In the present study, the accuracy and inference tasks, presented below, could be considered as memory measures, however, discussions are framed in terms of listening comprehension, as reflected in participants' performance on the mentioned tasks.

For this reason, the Polystemic Speech Perception approach proposed by Hawkins (2003), seems to explain well how listeners, whether children, adult, or listeners of a foreign language, can fully understand speech without the need for identification of all verbal input. Polystemic Speech Perception is a conceptual approach, according to which, the understanding of a message, regardless of the learner's language proficiency, is a joint product of both linguistic and paralinguistic information. While linguistic structure is related to syllable structure, phonemes, and grammatical rules, paralinguistic information is associated with the speaker's characteristics, such as voice, prosody, and gestures, and how they affect the listener's attitudes and emotions. All of this is combined, with the important information for the listener at that particular time connected to previous knowledge already in memory, so that understanding becomes possible (Hawkins, 2003, p. 389).

As proposed by Hawkins (2003), comprehension of an auditory signal does not require that listeners hear it completely and clearly; therefore, the complete parsing of the signal into formal linguistic categories is not necessary. Instead, the perception of a signal occurs through connections with mental representations of language already established; thus the categorization happens naturally, in terms of matching similar information. From this perspective, in the process of understanding a message, listeners take information from the linguistic source and start to organize it into coherent parts. Meanwhile, listeners also process paralinguistic information, and then all available information is integrated in order to make meaning. Therefore, the listener's purpose is to construct a meaning representation, "so he or she will accept the most probable meaning as soon as the overall evidence matches the expected sound pattern well enough" (Hawkins, 2003, p.391).

According to the Polystemic Speech Perception approach (Hawkins, 2003), although experienced listeners will understand a language and accent that they are familiar with more easily, they have the ability to use appropriate global patterns to understand different accents and styles, because there is guidance from both linguistic and nonlinguistic context. Considering the context, small parts of the signal can provide important cues for understanding the message. From this perspective, previous studies indicate that, although English native speakers understand English native-accented speech more easily, adaptation to English non-native-accented speech occurs very quickly, within one minute of exposure (Clarke & Garrett, 2004).

Hawkins (2003) also suggests that, as listeners are learning and adapting to new situations throughout life, their linguistic categories are not rigid, or static, but plastic. Therefore, the adaptation to new situations and accents happens because "the distribution of stored exemplars changes as the input changes" (Hawkins, 2003, p. 392). From that, Hawkins (2003) suggests that auditory memories should not be differentiated from other types of memories, because all of them are built based on sensory percepts, and connections are tentatively made to connect with factors that were already decoded. In Clarke and Garrett's (2004) study, although previous experience does play a role when a native speaker is listening to foreign-accented speech, there is also on-line learning, which allows for processing improvement.

From this perspective, it is proposed that information from speech and other forms of language are stored as an associative network, so that it is necessary for the external stimulation to activate only some linguistic or paralinguistic representations in long-term memory in order for a full assembly to be activated. Polystemic Speech Perception approach, as proposed by Hawkins (2003), has three fundamentals assumptions: 1) there is an interaction between top-down and bottom-up processes in understanding speech; 2) perception can occur through the

recognition of parts of the signal at different levels of the linguistic representation; 3) the understanding of a speech does not require the full analysis of the signal.

These assumptions confirm the importance that Polystemic Speech Perception (Hawkins, 2003) ascribes to both verbal and non-verbal information, considering that both of them are crucial in order to fully understand conversational speech (Hawkins, 2003). Categories of formal linguistics, such as phonemes and words, are important, but not all of them need to be identified in order for the listener to arrive at meaning. For this reason, when English native speakers listen to lectures given by English non-native speaker GTAs, it should be expected that certain difficulties in understanding the non-native-accented speech might happen, although adaptation to the unfamiliar dialect may occur quite quickly (Clarke & Garrett, 2004).

Adaptation to Non-native Accented English

It is frequently observed that second-language speakers, especially adults, even after being immersed for a long time in an L2 environment, still speak with an accent different from native speakers (Flege, Munro, & MacKay, 1995). From this perspective, Munro and Derwing (1995) suggest that, although the speech of an L2 speaker can be totally understood, the accent can present an extra difficulty for communication, due to attitudes against non-native speakers (Munro & Derwing, 1995; Reddington, 2008). Studies indicate an effect of prejudice against English non-native speaker GTAs on students' evaluations of these instructors, suggesting that they are hard to understand, and therefore, lack teaching skills (Alberts, 2008; Fleisher, et al., 2002; Rubin, 1992). On the other hand, Munro and Derwing (1995) also propose that, because of the English non-native speaker's accent being different from the accent that native speakers are more commonly exposed to, it may result in increased processing difficulty, which in turn, can

increase processing time. That could be a reason why those speakers are commonly evaluated as lacking communication skills.

Although there is research measuring reaction time for processing information from materials produced by English non-native speakers (Munro & Derwing, 1995), the present study differs from the previous one in that it assessed reaction time for completing a listening comprehension task for lectures given by both a native and a non-native speaker. Munro and Derwing (1995) used a sentence verification task, where participants judged if the utterances read by a native speaker or non-native speaker were true or false, and wrote what they had just heard. Therefore, the present study was important in that the task was closer to what is commonly experienced by college students in classroom settings.

Understanding Non-native Accented Speech: Attitudes toward Non-native English-Speaking GTAs

The implications of listening to non-native-accented speech seem to go beyond the possible short-lived difficulty due to differences in auditory input (Clarke & Garrett, 2004). In addition, it is associated with the complex debate among scholars, universities, and the public in general, about the interaction between American students and English non-native speaker instructors. On the one hand, it is a rich opportunity for students to interact with people from other nationalities, in that it can provide them, at the very least, a broad perspective about global issues. Moreover, it can become an opportunity for those students to interact with English non-native speakers, a situation that they certainly will face in their future jobs. On the other hand, others disagree with this perspective and state that those instructors' proficiency in English is often weak, they lack adequate vocabulary, and because of their poor English skills and

unfamiliar accent, they are hard to understand. Consequently, it hinders the learning process (Alberts, 2008).

In terms of challenges and difficulties faced by students when taking classes from non-native speakers, Alberts (2008) suggests that the worst problem, in courses instructed by an international professor, is not his accent, but "the fact that American students are not used to – or are unwilling to – adjust to non-native speakers of English" (Alberts, 2008, p.190). This topic "language issues" was the most present theme in the students' arguments in Alberts' (2008) study; however, the author observed that the majority of the students, although stating initial difficulties in understanding the professors' accent reported that, after a while, it became understandable, which is in accordance with the idea that adaptation to non-native-accented speech occurs quickly (Clarke & Garrett, 2004). Moreover, some mentioned that the fact that the professor's dialect was different from theirs required more attention from them during the lectures, which could help them in the learning process.

Studies indicate the influence of stereotypes on students' perception of English non-native speaker GTAs; overall, students have a tendency to give a significantly lower evaluation for foreign instructors than to domestic ones, even if they had attained higher grades with the formers (Neves & Sanyal, 1991). Similarly, interested in verifying the possibility of stereotypes influencing on students' perception of international GTAs, Rubin (1992) examined the effects of the instructor's ethnicity on students' performance in a listening comprehension task and in a survey about the instructors' communication skills. For Rubin's study, participants listened to a videotaped lecture given by a native speaker of English. While listening, they saw a picture of either a Caucasian or a Chinese instructor, identified as the speaker. Following the lecture, participants completed a cloze test of listening comprehension, in which they had to fill out

sentences that the lecturer said, where every seventh word was deleted. Participants remembered less after seeing the Chinese picture, which can be suggested that "participants stereotypically attributed accent differences – differences that did not exist in truth – to the instructors' speech. Yet more seriously, listening comprehension appeared to be undermined simply by identifying (visually) the instructor as Asian" (Rubin, 1992, p.519).

In a further study, Rubin, Ainsworth, Cho, Turk and Winn (1999) tested American students' listening comprehension and their evaluations of an audiotaped lecture. This lecture was recorded in English by a native Dutch speaker, and participants listened to it while viewing a slide projection of either a Chinese male or a dark-haired Caucasian. After the lecture, participants were asked to fill out a verbatim transcript of the lecture, with some blank spaces, with deleted words. After the listening comprehension task, participants were asked to answer questions related to speech evaluation, teaching ability, lecture quality, and attitudes toward international instructors. There were more positive reactions to the Euro-American instructor than for the Chinese.

Considering the issue of prejudice against English non-native speaker GTAs, Bresnahan, Ohashi, Nebashi, Liu, and Shearman (2002) suggest that, in accordance with the social identity theory (Tajfel & Turner, 1986), the non-native accent evokes the person's association with a particular group; consequently, it can carry social stereotypes that are associated with that group. From this perspective, students would have a tendency to show stronger identification with members of their own group. That could be a reason why international students and students with higher GPAs tend to have a better opinion about English non-native speaker instructors than other students do (Neves & Sanyal, 1991).

Difficulties Experienced by Students and English non-native speaker Teaching Assistants

Although there seems to be a presence of prejudice by English native speakers against instructors who are English non-native speakers, some English non-native speaker instructors do mention difficulties in expressing themselves in the classroom, which could be a reason for problems in the learning process, most fundamentally in the interaction with students (Alberts, 2008). Nonetheless, research shows that students showed a negative perception about English non-native speaker instructors' teaching ability, and "many suggested that FBI's [foreign born instructors] difficulty in teaching or communicating effectively hurt the quality of the students' experiences, and a majority of students would, if given a choice, prefer to have their classes taught by NBIs [native born instructors]."(Neves & Sanyal, 1991, p.306). For this reason, the authors suggest that institutions overall need to be diligent about assessing and enhancing international instructors' communication abilities and teaching skills. Therefore, while some researchers suggest that there should be a focus on training for foreign instructors, including classroom instruction in spoken English, and teaching methods (Fleisher et al., 2002; Neves & Sanyal, 1991), others advocate that instructors' training should not be limited to English skills. In addition, instructors' training should consider students' prejudice and culture as well (Rubin, 1992).

Even though there could be difficulties in understanding an English non-native speaker GTA at the beginning of a class session, as observed by Hawkins (2003) and Clarke and Garrett (2004), listeners are able to rapidly adapt to the new – or different – accent, therefore not compromising understanding. At least one study even found students attaining higher grades with English non-native speaker GTAs than with English native speakers (Fleisher, et al., 2002). From this perspective, it is observed that an important point influencing students' performance

was the prior training given to teaching assistants, regardless of their nationality. From this perspective, Norris (1991) observed that students taught by teaching assistants who received teacher training outperformed those students taking classes with instructors with no training, independent of being English native speakers or not.

However, the problem regarding international GTAs is not only related to English skills (Smith, Downey, & Cox, 1999), but some GTAs, independent of being English native or non-native speakers, might have difficulties in communicating with students. It is noteworthy that a survey administered to all first-year GTAs at Kansas State University indicated that across the years from 2000 through 2006, about 1/3 of the first-year GTAs were perceived as having communication problems. This includes both English native speakers and international GTAs. However, in the last four years (2007-2010), no first-year GTA has been reported as having communication challenges, according to the Kansas State University GTA communication survey.

These results have been attributed to the institution of prior training that the majority of departments require from first-year teaching assistants. This is consistent with findings that students did not report significant differences between teaching styles of English non-native speaker professors and native ones, when these instructors had received their graduate training in an American university (Alberts, 2008). Thus, there is an indication that when English non-native speaker instructors receive proper training, students tend to give them higher evaluations (Alberts, 2008; Fleisher et al., 2002; Smith, et al., 1999). Therefore, a primary purpose of the present study was to test if, after listening to lectures from an English native speaker and from an English non-native speaker teaching assistant, participants – all English native speakers – would show differences in performance, and evaluations about the speakers' communication skills.

Some "Cues" for Listening Comprehension

Considering that English native speakers can experience difficulties in understanding English non-native speaker GTAs, either due to difficulties from differences in accent (Clarke & Garrett, 2004; Hawkins, 2003), prejudice (Alberts, 2008; Bresnahan, et al., 2002; Neves & Sanyal, 1991), or even due the GTA's lack of communication skills (Fleisher, et al., 2002; Neves & Sanyal, 1991; Smith, et al., 1999), this raises the question of which tools or cues would enhance those students' listening comprehension?

As suggested by some authors, communication is a broad term and implies the junction of different factors, besides verbal language; for example, listeners may more easily understand speech when they can see the speaker's gestures than when such visual information is not available, enriching communication (Goldin-Meadow, 1999; Kellerman, 1992). Some researchers interested in the study of gestures consider them as intrinsically related to language and thus, to meaning-making (for review, see Steven & McCafferty, 2008). One important fact is that gestures are found in all cultures, though they are not universal; therefore, people from different cultures can understand the meaning of some gestures similarly (Goldin-Meadow, 1999). According to Steven and McCafferty (2008), gestures also have multiple purposes, such as: to add information to what is being said, to compensate for some difficulties in speaking, to make parallel constructions, and to retain a turn during conversation.

Besides enriching communication between listener and speaker, a "self-synchrony" between body motion and speech has been observed; thus "as a normal person speaks, his body 'dances' in precise and ordered cadence with the speech as it is articulated" (Condon & Ogston, 1971, p.153). Hence, it is suggested that there is no movement during speech that does not have a relation with what is being said (Condon & Ogston, 1971; Glenberg, Sato, & Cattaneo, 2008). However, gestures that the speaker might produce are not restricted to helping himself express an

idea, but they also enhance the interaction among listeners and speakers (Condon & Ogston, 1971; Kellerman, 1992). From this perspective, there is an "interactional synchrony" among speakers and listeners; as a speaker moves his body, listeners tend to move in the same or similar direction (Condon & Ogston, 1971). It is suggested that gestures are correlated with speech and need to be understood as two processes arising from the same mental process, and constituting one integrated system (McNeill, 1992).

Furthermore, according to the Information Packaging Hypothesis (Hostetter, Alibali, & Kita, 2007; Kita, 2000) gestures occur more often when the information is difficult to conceptualize; therefore gestures help speakers to package spatial information into units appropriate for verbalization. It happens because gestures activate mental representations, and help speakers organize different pieces of the spatial image and put it into verbalized form. However, this approach seems to be limited to considering the benefit of gestural production for the speaker, and does not offer much attention to its effects and benefits for the listener.

In terms of different types of gestures, it is suggested that the most frequently produced type by speakers is the iconic gesture (Nicoladis, 2007). These gestures look like the referent in some way, and might be helpful in accessing conceptual information, because they activate words that are linked to that concept. For example, McNeill (1992) mentions a situation where the speaker tries to narrate a story read in a book. The speaker narrates the moment when the character falls from a tree and uses gestures appearing to pull something up and then pull it down. Besides iconic gestures, there are also beats, deictic gestures, and conventional gestures. The first ones, beats, are normally used to emphasize one point made by the speaker. As suggested by McNeill (1992), beat gestures do not have a significant semantic meaning like iconic or metaphoric gestures. However, as its name suggests, it works as "beating a musical

time" (McNeill, 1992). Its movements are restricted to short movements of hands and fingers in a small space (as in the armrest of the chair), but it is totally related to the speaker's conception of the discourse. Beat gestures mark some word that makes a reference to the discourse as a whole, not just to one particular fact.

Deictic gestures occur when the speaker physically refers to some object present in the environment, rather than referring to it symbolically (e.g., by pointing). As noted by Nicoladis (2007), children speaking in their second language tend to use more deictic gestures when talking to someone who does not speak their first language. As a result, it suggests that deictic gestures may play a temporary role in language acquisition. Nevertheless, McNeill (1992) points out that deictic gestures are not limited to concrete objects in the real world but can also refer to abstract concepts. It may occur, for example, when the speaker asks the hearer where he comes from, pointing to something not specifically related to this question. Finally, conventional gestures are related to particular gestures shared in one particular culture, and are probably less crucial for language acquisition than beats and deictic gestures.

Considering the importance of gestures for listening comprehension, some studies have investigated second language learners' performance on listening comprehension in two different conditions: with the presence and with the absence of gestural cues (Jung, 2003, Sueyoshi & Hardison, 2005). For their study, Sueyoshi and Hardison's (2005) participants were assigned to one of three conditions: audio-visual-gesture-face condition; audio-visual-face condition, in which participants were just able to see the facial expressions of the speaker, but not his gestures; or audio-only condition. It was observed that participants who received gestural cues outperformed those with no signal cues. Therefore, it was suggested that gestural discourse cues can facilitate L2 listening comprehension. However, not all gestures or body movements enhance

understanding. It has been observed that when learning words in a second language, this process is enhanced if the gestures are congruent with what is being taught (Kelly, McDevitt, & Esch, 2008). From this perspective, especially when a word is not a cognate, iconic gestures may help people learn this word because of the semantic overlap between word and gesture. It was concluded that gestures seem to facilitate memory not by enhancing attention, but because only the integrated gestures, which are conceptually associated with the meaning of the word, allowing multimodal memory representations.

That being said, considering how helpful speakers' gestures are (or are not) for the listeners, English as second language learners identified three different major themes, namely: cognitive functions of teachers' gestures, which helped their learning; emotional functions of teachers' gestures, that communicate teachers' emotions, and thus could enhance the interaction among students and teachers; and organizational functions of teachers' gestures, which had a function to improve classroom management (Sime, 2006). Considering that gestures occur in interaction with students, it was suggested that students actively make meaning of teachers' gestures; thus they are actively involved in the dynamic of the classroom and in the learning process.

All in all, it could be considered, in accordance with the Polystemic Speech Perception conceptual approach proposed by Hawkins (2003), that the access to visual gestural cues could add information to listeners' perception of an auditory message, thus aiding understanding. Therefore, considering the lack of studies of English native speakers' listening comprehension of academic lectures, it could be useful to investigate how gestures can facilitate their understanding of lectures given by both English native speakers and English non-native speakers.

Purpose

The purpose of this study was to examine English native speakers' performance on a listening comprehension task testing information derived from lectures given by both an English native speaker and an English non-native speaker GTA. This study also examined students' evaluation of the lecturers' communication skills. Furthermore, this study investigated if access to visual cues facilitated students' understanding of the lectures given by the graduate teaching assistants, regardless of the lecturers' native language. Finally, considering that the non-native speaker's accent would differ from the participants', the processing time for answering questions on the listening comprehension task was also examined when the lectures were given by the non-native speaker, in comparison to the same ones given by the native speaker.

Hypotheses

Hypotheses – Instructor's Communication Skills

H_{1a}: Native English-speaking participants will evaluate the English native speaker as having higher communication skills than the non-native speaker. This evaluation could be due either to prejudice against the English non-native speaker GTA, and/or difficulties or inexperience in understanding an English non-native-accented speech.

H_{1b}: In accordance with participants' evaluations of the lectures, the majority of the participants will show a preference to take a class from the native speaker instead of the non-native speaker.

Hypotheses - Speaker's Accent

H_{2a}: Participants will show better performance on both factual (items correct) and inference (strength of inference) questions when listening to the lectures given by the native speaker than by the non-native speaker.

H2b: Due to the non-native speaker's English accent being different from the participants' accent, it is expected that participants will take longer to answer questions related to lectures given by the non-native speaker than by the native speaker.

Hypotheses – Lecture Mode

H3a: Participants will show better performance on both factual and inference questions when having access to visual cues than under audio only conditions. This pattern will happen for answering questions related to lectures given by both native and non-native speakers.

H3b: Participants will show a shorter reaction time when having access to visual cues than under audio only condition, regardless of the speaker. This would happen because the video condition will provide more information, so that participants will be able to respond to factual and to inference questions faster when having access to visual cues.

CHAPTER 2 - Method

Participants

One-hundred and thirty undergraduate students (mean age 19.58), all native English speakers from Kansas State University enrolled in General Psychology, participated in this study for course credit. All participants answered a demographic questionnaire (see details below). The majority of the participants were in their freshman year (64.3%). There were 72 (51.4%) women, 58 (41.4%) men, and 10 participants did not indicate sex. Among the participants, 88 (62.9%) reported some knowledge of a second language[2]. Moreover, 74 (52.9%) of participants had some foreign travel experience[3].

Materials

Stimuli

For the construction of the stimuli, two female Graduate Teaching Assistants, an American English native speaker and a English non-native speaker GTA from Brazil, for whom

[2] As the question about knowledge of a second language was restricted to asking participants about other languages that they speak, understand, are formally studying, or have studied in the past, not in terms of their proficiency, no further analyses were conducted considering that some participants have an L2.

[3] The question about experience abroad was limited to asking participants to list the countries in which they have lived, traveled, or vacationed, the duration of their stay, and age at that time, so that some participants answered this question in detail, while others only mentioned the countries where they had been. For this reason, no further analyses were performed considering experience abroad.

English is a second language (her L1 is Portuguese), both from the Department of Entomology at Kansas State University, were each videotaped while giving the same lecture[4]. The speakers were asked to choose four topics together, ones which did not require visual aids. They were asked to speak as naturally as possible in giving the four short lectures, as if teaching students in an introductory survey course in Entomology; thus those speakers did not assume any prior knowledge about the topic. Therefore it was supposed to be neither too difficult nor too easy or simple for the participants. The speakers agreed upon the following topics: 1) What is Entomology and what you can do as an Entomologist; 2) General background; 3) Basic structure of insects; 4) Specific orders of insects. The speakers were not told about the specific purpose of this study, only that it would be investigating students' comprehension of academic lectures. (See outline of the lectures in Appendix A.)

As all participants were exposed to all four videos, there was a need for having the same questions for all participants, regardless of which lecturer they had watched or listened to for a given video. Therefore, a verbatim transcript of the native speaker's lectures was made, and the non-native speaker was videotaped, guided by this verbatim text. It is important to note that the non-native speaker was allowed to make minor wording changes in the transcript, so that she could feel comfortable while giving the lectures[5].

As suggested by Jung (2003), the speakers gave an expository lecture, instead of a narrative one, because the organization of expository texts "makes it crucial for listeners (and

[4] It is important to mention that both speakers had taught college classes for more than one semester, prior to this study.

[5] It is important to note that no information changed by the non-native speaker was tested in the listening comprehension task, in order to make sure that all participants had access to all the same information questioned in this task.

readers) to identify the main points and to distinguish more important from less important ideas in the text" (Jung, 2003, p.571), skills which are crucial for understanding academic lectures. Also, exposition is a more typical structure for class lectures than narration.

A Sony digital camera was used to videotape the speakers, and it was focused above the lecturer's waist, capturing all hand and full-body movements the speakers made. This constituted the video condition. For the audio-only condition, the image of the lecturers was removed from the videos, and participants listened to the sound track of the lecture, with no access to visual cues.

Demographic Questionnaire

This 7-item questionnaire assessed participants' age, school year, and native language. Likewise, it assessed if participants knew a second language, and finally, if they have had experiences traveling or living abroad. (See Demographic Questionnaire in Appendix B).

Listening Comprehension Task

A listening comprehension task was developed to measure participants' comprehension of lectures given by the two graduate teaching assistants. Right after each of the four short lectures, participants answered factual, multiple-choice comprehension questions, with 4-alternative forced choices. Also, participants answered inference questions related to each of the four lectures. For this latter type of question, they were asked to judge each sentence in a scale ranging from 1 ("definitely true") to 5 ("definitely false")[6]. These questions asked about material that was strongly implied but not stated directly, in the lecture. It was a measure of how likely

[6] For analysis purposes, participants' answers to some inference questions were reverse coded, in order to ensure that high overall means for inference questions consistently indicate a better performance, i.e., stronger inferences drawn.

participants were to draw an inference. Because of the amount of information and detail provided by the speakers for each lecture, the number of questions varied across videos. Specifically, video 1 had 14 factual questions and 4 inference questions, video 2 had 7 factual questions and 3 inference questions, video 3 had 24 factual questions and 5 inference questions, video 4 had 20 factual questions and 5 inference questions. Thus, every participant answered a total of 65 factual questions and 17 inference questions. The task was self-paced, so that it was not a timed test, and the reaction time for reading and answering each question was measured. Furthermore, questions were presented one at a time, so that participants were unable to go back to previous questions. (See questions in Appendix C.)

Instructor Communication Skills

This survey was adapted from the "K-State GTA Communication Survey" developed at Kansas State University, and administered every semester in classes being taught by first-year GTAs – both English native speakers and English non-native speaker GTAs. In the present study, participants evaluated each lecturer, rating their communication abilities, such as: enunciation, clarity in expressing ideas and concepts, organization in the content of speech, and knowledge about the topic. For this, there were 11 items, with 5-point likert scales, with a total possible score ranging from 11 to 55. The order in which participants evaluated the speakers (i.e., non-native speaker first, and native speaker second, or vice-versa) was counterbalanced. Also, participants guessed the country each speaker was from and they indicated which speaker would be their choice for instructor if they would take a class in Entomology. Participants also were asked which aspects of an instructor's delivery are most helpful for them when they are listening to a class lecture. Finally, they gave information about their experience with English non-native speaker graduate teaching assistants, and in case they had had that experience, they

evaluated it. After completing this part of the survey, participants were asked if they had taken any classes in Entomology and also if they had prior knowledge about the topics discussed in the lectures. (See Instructor Communication Skills survey form in Appendix D.)

Design and Procedure

Upon their arrival, participants were asked to read and sign the consent form, which contained fundamental information about the nature of this study (see Appendix E). Participants then were told that, in this study, we were analyzing students' comprehension of academic lectures. Participants were given oral and written instructions for the completion of this study: they would listen to and/or watch four short lectures given by two different graduate teaching assistants from the Department of Entomology. Similarly to Sueyoshi and Hardison (2005), participants were not allowed to take notes, in order to make sure that they attended to the visual input. Participants were tested individually, on a desktop computer, and wore a headphone set.

This was a within-subjects design, in which each participant was tested in both conditions, in randomized order: audio only and video. Each participant heard both conditions for each speaker, one lecture in each mode. Furthermore, they heard one speaker for the first two videos, and the other speaker for the third and fourth videos, with one lecture for each speaker in the audio only mode and in the video mode. The order of the videos was fixed across all participants. Therefore, besides the order of the four videos, the other variables (speaker and lecture mode) were counterbalanced with 8 orders, and each participant was randomly assigned to one of these orders.

Right after each lecture, participants were asked to complete the listening comprehension task. After all four lectures and question sets, participants completed the Instructor Communication Skills survey, in which they evaluated the lecturers' performance, indicated

prior experience with English non-native speaker GTAs, and if they had prior knowledge about the topics of the lectures (see Instructor Communication Skills survey in Appendix D). Once this survey was completed, participants were told about the purpose of this study, and then they were thanked for their participation. This study took around 45 – 50 minutes for completion.

CHAPTER 3 - Results

Overview of Analyses

This section is composed of three subsections: (a) First, results are presented from data obtained from the Instructor Communication Skills survey. (b) Next, the principal analyses are presented in terms of the different independent variables explained in this study: main effects first, and then interactions. (c) Finally, hierarchical regression analyses were conducted in order to test which variables were significant predictors of listening comprehension for academic lectures.

Instructor Communication Skills

It is important to remember that in the audio only and in the video conditions, participants heard the same sound track from the lectures, i.e., all the same information, differing only in which speaker and whether or not they also saw the speaker. After having listened to/watched all four videos and answered questions related to each of them, participants completed the Instructor Communication Skills survey, in which they evaluated the lecturers.

Speakers' Skills

Prior to analyzing data from the Instructor Communication Skills survey (see Appendix D), items numbered 1, 3, 5, 10, and 11 were reverse-coded, so that higher scores consistently indicate better communication skills. Initially, the scores on the 11 scales were added together to produce an overall evaluation for each speaker. Results indicate that the total scores given to each speaker differed significantly [t (118) = 7.843, $p < .001$)]. As predicted in hypothesis H_{1a}, participants evaluated the native speaker as having significantly better communication skills (*M*

= 42.80, *SD* = 5.57) than the non-native speaker (*M* = 37.71, *SD* = 5.99). Considering the 11 items of this survey individually, the speakers differed significantly on the following items:

Item 1) The speaker "enunciated clearly" [*t* (128) = 12.25, *p* < .001]: the native speaker scored significantly higher (*M* = 4.41, *SD* = .69) than the non-native speaker (*M* = 3.00, *SD* = 1.07);

Item 5) The speaker "expressed ideas and thoughts clearly" [*t* (129) = 3.30, *p* = .001]: the native speaker had higher scores (*M* = 3.93, *SD* = .87) than the non-native speaker (*M* = 3.54, *SD* = 1.03);

Item 7) The speaker "lacked skills in explaining difficult concepts" [*t* (126) = 2.92, *p* = .004]: the native speaker had significantly better scores (*M* = 3.85, *SD* = .86) than the non-native speaker (*M* = 3.57, *SD* = 1.01) (i.e. according to the scale, participants overall considered that the non-native speaker was worse in skills in explaining difficult concepts).

Item 9) "The speaker's accent was hard to understand" [*t* (129) = 11.08, *p* < .001]: the non-native speaker was rated significantly worse (*M* = 3.36, *SD* = 1.14) than the native speaker (*M* = 1.78, *SD* = 1.04);

Item 11) "If it would be possible, I would like to take a class with this lecturer" [*t* (125) = 11.08, *p* < .001]: the native speaker scored higher (*M* = 3.34, *SD* = 1.21) than the non-native speaker (*M* = 2.62, *SD* = 1.13).

Participants did not rate the speakers differently on the scales of:

Item 2) The speaker "spoke too rapidly";

Item 3) The speaker "spoke loud enough";

Item 4) The speaker "covered too much material";

Item 6) The speaker "lacked good organization";

Item 8) The speaker “used a vocabulary too advanced for this lecture”;

Item 10) The speaker “was very knowledgeable about the material”.

Mean ratings for all items appear in Figure 1.

The fact that the speakers differed significantly on items 5 and 7 could be due to the presence of prejudice, because even though both speakers gave the same information, they were evaluated differently in terms of expressing ideas and thoughts clearly, and lacking skills in explaining difficult concepts.

Speakers' Nationality

In addition to evaluate the speakers' communication skills, participants guessed the country each speaker was from. For the native speaker, 90% of the participants correctly guessed that she was from the US, while 4.6% guessed she was from some country in Europe (most often England). On the other hand, 40% of the participants guessed the non-native speaker was from a Spanish-speaking country, which could be related to the fact that the accent of Portuguese speakers is commonly associated with the accent of Spanish speakers. Moreover, 31.5% of the participants guessed she was from an Asian country (most often India). This could be explained in terms of the fact that she had some of the stereotyped characteristics normally attributed to Indian women, such as skin tone and dark, long hair. Only 9 participants (6.9%) correctly guessed that she was from Brazil. (See Table 1).

Speaker Choice

After completing the evaluation of each lecturer, participants were asked to state who would be their first and second choices as instructor, if they were going to take classes in the Department of Entomology. In accordance to hypothesis H_{1b}, 109 participants (83.8%) chose the native speaker, while 18 (13.8%) chose the non-native speaker, and 3 (2.3%) participants said

they did not know. Then, they were asked to justify their decision, and their responses were content analyzed into categories. In this way, 79.8% of the participants who chose the native speaker said they would do so because her "accent was easier to understand." Similarly, 5.5% of these participants said they would choose the native speaker because they "prefer no accent." Other reasons less frequently cited for preferring the native speaker were "more description, clarity," "more enthusiasm," "fluency/knowledge," "interesting topic," "need to pay more attention because of accent," "more likely to be relatable to students" (see Table 2). It was interesting to observe that 10 participants who would choose the native speaker did so because she presented "less information." In fact, those participants were all in conditions in which they had the native speaker first, and the non-native speaker for the videos three and four, which contained much more information than did videos one and two. Therefore, for those participants, the native speaker appeared to have given less information than the non-native. However, none of those who would choose the non-native speaker mentioned "less information" as the reason for their choice.

Only 18 participants (13.8%) said they would choose the non-native speaker. The most frequent reason for their choice was that she presented "more description and clarity", which was mentioned by 50% of the participants who would choose her. Others reported other motives, such as her "accent was easier to understand," she had "more enthusiasm," she had more "fluency and knowledge," and they would "need to pay more attention because of her accent". (see Table 2).

Aspects of Speaker Delivery

Participants were asked which aspects of an instructor's delivery are most helpful for their understanding when they are listening to a class lecture. Their responses were content

analyzed into categories. Considering that some participants mentioned two aspects, the number refers to how many times each of the following aspects of teacher's delivery were mentioned by the participants of this study. Therefore, "when the teacher speaks clearly" was the most frequently mentioned, being referred to by 77 participants. As second highest mentioned, "teacher's enthusiasm," was referred to by 28 participants. "Gestures" occupied the third position, being cited by 23 participants, and followed by "examples and repetition," which was mentioned by 19 participants. Other aspects of instructor's delivery cited by the participants, but with lower frequency, were: "organization" (11), "visual aids" (8), "topic relevance" (4), and "teacher's knowledge about the topic" (7). (See Figure 2).

Previous Class with a Non-Native Speaker

One-hundred and fourteen participants (87.7%) indicated that they had previously taken a class with a non-native speaker instructor. Those who had this experience were asked to evaluate it on three 5-point scales, so that, after reverse-coding items 1 and 3, higher scores (maximum of 15) would indicate a more positive experience with non-native instructors. Results indicate that participants overall evaluated this experience as moderately good (M = 10.23, SD = 2.97). (See Figure 3).

Previous Class in Entomology and Familiarity with the Topic

Since only four participants (3.1%) indicated they previously had taken a class in Entomology, this question was not further considered. However, 46 (35.4%) participants reported some prior knowledge about the topic, by responding "yes" to the question: "were you familiar with the topics discussed by the lecturers?" Those who answered "yes" were asked to indicate which topics they had prior knowledge about before of this study. From this, the topic of

the third video, description of the insects' body parts, was the topic most frequently mentioned. Further discussion about this appears below.

Principal Analyses

Independent Variables

The primary independent variables manipulated in this study were speaker (i.e., English native speaker and English non-native speaker), and lecture mode (i.e., audio only and video), both within-subjects variables. A secondary independent variable of familiarity with the topic was also examined as a between-subjects variable, based on participants' "yes" or "no" response to the question "were you familiar with the topics discussed by the lecturers?" The question was answered "yes" by 46 participants (35.4%) and "no" by 84 participants (64.6%). It is important to note that, even though familiarity with the topic was not a variable in the design of this study beforehand, participants reporting familiarity with the topic were indeed overall evenly distributed across the eight different counterbalancing speaker and lecture mode combinations. For the 46 participants reporting familiarity with the topic, 20 had the non-native speaker for videos 1 and 2, while 26 had the native speaker. Similarly, among the 84 participants reporting no familiarity with the topic, 46 had the non-native speaker first, and 38 had the native speaker for videos 1 and 2. Therefore, differences between the groups could reliably be attributed to the reported familiarity with the topic, and not merely to the condition that participants were signed to.

Dependent Variables

The dependent variables were participants' performance on listening comprehension tasks following lectures: participants' accuracy on factual questions (i.e., the total number of

correct answers to factual questions across all four lectures), participants' mean ratings of strength of inference (1 – 5 scale), and participants' reaction times to answer both factual and inference questions.

To test for main effects and interactions, repeated measures Analyses of Variance (ANOVAs) were conducted, with speaker (Native English speaker or Non-native English speaker), and lecture mode (Audio only or Video) as within-subjects factors, testing for accuracy (number of correct responses), inference strength[7] (mean rating on 1 – 5 scale for inference questions), and reaction times for answering factual and inference questions. From these primary analyses, it was observed that participants often responded differently due to reported previous knowledge about the topic of the lectures. For that reason, familiarity with topic (Familiar or Unfamiliar) was included as a between-subjects factor. When considering the total number of participants (N = 130), results demonstrated two significant main effects, and one significant two-way interaction.

Further Multivariate Analyses of Variance (MANOVAs) were performed to probe main effects found in ANOVAs.

Effects of Speaker's Accent

Effects of Speaker's Accent on Accuracy for Factual Questions

Results obtained from the repeated measures ANOVA did not support hypothesis H_{2a}, which predicted that participants would show higher accuracy for factual questions when hearing lectures by the native speaker than by the non-native speaker. However, participants'

[7] To answer inference questions, participants were asked to rate the sentences truthfulness ranging from 1 (definitely true) to 5 (definitely false), according to what they heard from the lectures. Therefore, prior to analyzing inference strength ratings some items were reverse-coded, so that higher numbers mean stronger inferences.

performance on answering factual questions was slightly better after hearing the native speaker than after hearing the non-native speaker.

Furthermore, results indicated a significant main effect of familiarity with the topic on accuracy for factual questions [F (1, 128) = 12.95, $p < .001$, $\eta^2 = .09$]. Participants familiar with the topic performed significantly better (M = 51.32, SD = 6.57) than participants unfamiliar with the topic (M = 46.16, SD = 8.41), although neither group mean approached a perfect score of 65.

A further MANOVA was conducted in order to test if the two groups (i.e., those reporting familiarity with the topic, and those reporting no familiarity with the topic) differed in terms of accuracy for factual questions, when hearing to lectures given by the native or by the non-native speaker. A significant difference between the groups was found when the non-native speaker gave the lecture [F (1,128) = 8.21, p = .005, η^2 = .06]. Those familiar with the topic scored significantly higher when having the lectures given by the non-native speaker (M = 26.76, SD = 10.27) than those unfamiliar with the topic (M = 21.73, SD = 9.19). On the other hand, the groups did not differ significantly when having the lecture given by the native speaker [F (1, 128) = .005, p = .944, η^2 = .00]. (See Table 4 and Figure 4 for details).

Effects of Speaker's Accent on Inference Strength Ratings

Results obtained from repeated measures ANOVA indicated no main effect of speaker on participants' performance for inference strength, which does not support hypothesis H_{2a}.

Further Multivariate Analysis of Variance (MANOVA) indicated a main effect of familiarity with the topic for inference strength for lectures given by the native speaker [F (1, 128) = 9.51, p = .003, η^2 = .069]. Participants familiar with the topic scored significantly higher (M = 4.14, SD = .79) than participants unfamiliar with the topic (M = 3.77, SD = .71) when the lectures were given by the native speaker. However, the groups did not differ significantly on

their inference strength when the lectures were given by the non-native speaker. (See Table 5 and Figure 5).

As indicated by the results, familiarity with the topic constituted in an important factor influencing participants' performance on both factual and inference questions. However, the pattern of this performance seems to differ as a function of the speaker's accent and type of question, consistent with the notion that factual and inference questions are two different cognitive processes.

Effects of Speaker's Accent on Reaction Time for Answering Factual Questions[8]

The repeated measures ANOVA found no main effect of speaker on time spent to answer factual questions (see Table 6 for details). It did not support hypothesis H2b in the prediction that participants would take longer for answering questions related to lectures given by the non-native speaker than by the native speaker, due to possible difficulties faced in reason of the non-native accented speech.

Effects of Speaker's Accent on Reaction Time for Judging Inference Strength

Repeated measures ANOVA indicated no main effect of speaker on time spent in answering inference questions. (See Table 7 and Figure 7). Since there was no significant effect of previous knowledge, no follow-up MANOVAs were conducted. Similarly as for factual

[8] Prior to conducting analyses of reaction times, the reaction time data were trimmed, eliminating the fastest 2% and the slowest 2% of the times. This procedure was done for factual questions and inference questions separately, for each combination of the two independent variables of speaker and lecture mode. It trimmed the participants' responses that were excessively slow or fast from each condition. After trimming, the RT data for factual questions was left with 5996 cases (each participant answered 65 factual questions), and the data for inference questions was left with 2124 cases (each participants answered 17 inference questions).

questions, this is against the prediction that participants would take longer for answering inference questions when hearing the non-native speaker than when having lectures given by the native speaker.

Effects of Lecture Mode

Effects of Lecture Mode on Accuracy for Factual Questions

When considering all participants together, regardless of familiarity with the topic, repeated measures ANOVA indicated no main effect of lecture mode on accuracy for factual questions (see Table 4). This fails to confirm hypothesis H_{3a}, which predicted that participants would perform better when having access to visual cues than under audio only condition.

However, when considering familiarity with the topic as a factor, results obtained from MANOVA indicated that the groups differed significantly in both audio only [F (1, 128) = 4.02, p = .047, η^2 = .03], and video [F (1, 128) = 10.67, p = .001, η^2 = .08] conditions. Participants with previous knowledge performed better on audio only (M = 24.95, SD = 5.20) than participants without previous knowledge (M = 23.02, SD = 5.28). Likewise, participants familiar with the topic showed a better performance in the video condition (M = 26.36, SD = 4.36) than participants reporting no familiarity (M = 23.14, SD = 5.86). As it can be seen in Table 4, although there was no main effect of lecture mode on accuracy for factual questions, participants performed slightly better when having access to visual cues.

Effects of Lecture Mode on Inference Strength Ratings

Similarly as for factual questions, repeated measures ANOVA indicated no main effect of lecture mode on inference strength (see Table 5). Therefore, the prediction that participants would draw stronger inferences when having access to visual cues (H_{3a}) was not supported.

However, participants did show a slightly better performance when they were able to see the speakers.

Effects of Lecture Mode on Reaction Time for Answering Factual Questions

It was predicted that participants would respond to factual questions better when having access to visual cues (H_{3b}), however, the repeated measures ANOVA found no main effect of lecture mode on time to answer to inference questions (see Table 4 for details). After performing a 2 (non-native speaker vs. native speaker) x 2 (audio only vs. video) ANOVAs separately for the groups familiar with the topic versus unfamiliar with the topic, no main effects or interactions were found for those familiar with the topic. However, a two-way speaker by lecture mode interaction was found for those unfamiliar with the topic [F (1, 81) = 5.58, p = .021, η^2 = .06].

When participants reporting no previous knowledge about the topic heard the native speaker giving the lecture, they answered factual questions faster when the lecture was in the audio only condition (M = 7900.04 msec, SD = 173.59 msec) than when they had access to visual cues (M = 8187.11 msec, SD = 175.73). On the other hand, when these participants heard the non-native speaker, they responded faster when having access to visual cues (M = 7916.01 msec, SD = 201.64) than in the audio only condition (M = 8244.07 msec, SD = 196.56). Therefore, participants reporting no familiarity with the topic took the longest time to answer factual questions on the non-native speaker, audio only lecture (See Figure 6), which is in the predicted direction of hypothesis H_{3b}, in the way that the visual information may have helped these participants decode the information, especially when given in non-native accented speech.

Effects of Lecture Mode on Reaction Time for Judging Inference Strength

Results from the three-way ANOVA indicated a main effect of lecture mode [F (1, 128) = 4.3, p = .039, η^2 = .03] on time to judge inference strength. Participants performed

significantly faster in the audio only condition (M = 5832.21 msec, SD = 117.59) than in the video condition (M = 6068.10 msec, SD = 138.14) when making inferences (see Table 5), though the effect size was not large in magnitude. This is in the opposite direction from what was predicted in hypothesis H_{3b}, which stated that participants would respond judge inference strength faster when having access to visual cues than under audio only condition. As discussed in the discussion section, it could be due to the fact that the access to visual cues provided more information to decode, so that participants took longer to answer inference questions.

Regression Analyses

Regression analyses were performed to examine if data obtained from the Instructor Communication Skills survey (Appendix D) predicted participants' performance on the listening comprehension task. Therefore, regression analyses were performed in order to verify variables that could be predictors of participants' performance at the listening comprehension task.

Results obtained from regression analyses indicate that the evaluation of the native speaker's communication skills was a significant predictor of accuracy for the video (β = .186, p = .049), but there was only a non-significant trend in this direction for the audio only condition (β = .169, p = .071). Moreover, ratings for the non-native speaker communication skills did not predict accuracy for audio nor for video (see Tables 6 and 7 for details).

In addition, the choice between the two speakers was a significant predictor of inference strength after the native speaker's lectures (β = -.181, p = .049), but not the non-native speaker's lectures (β = .140, p = .124) (see Tables 8 and 9). Those who chose the native speaker made stronger inferences after the native speaker's lectures (M = 3.92, SD = .61) than those who chose the non-native speaker (M = 3.66, SD = 1.03).

CHAPTER 4 - Discussion

The major purpose of this experiment was to investigate the performance of native English-speaking college students on a listening comprehension task derived from lectures given by both an English native speaker and a English non-native speaker Graduate Teaching Assistant. The particular interest was to assess if the availability of gestural and facial visual cues facilitated students' listening comprehension for a lecture given by an English native speaker and/or by an English non-native speaker GTA. Additionally, this study examined students' evaluation of the lecturers' communication skills, which in turn, could have an influence on their performance in the listening comprehension task.

Findings of this study are potentially of great importance to American universities, especially regarding academic performance of students at college classes. The interaction between English native speakers and English non-native speaker teaching assistants is of foremost importance because of the increasing number of international graduate students in American universities. As observed, the vast majority (88%) of the participants of this study, although only in their freshman year, had already had classes taught by English non-native speaker GTA(s). Therefore, participants' differential evaluations of the native and non-native speakers, although both presented the same information, as well as their performance to the listening comprehension task, are of prime importance.

Speakers' Communication Skills

In accordance with previous study (e.g., Gill, 1994), participants overall performed better when having lectures given by the native speaker than by the non-native speaker, and they also evaluated the native speaker as having significantly higher communication skills than the non-

native speaker. This is consistent with previous studies in which participants responded differently according to the speaker's accented speech. It was observed that the speakers' accent has an effect on both students' comprehension and on students' evaluations about the speaker (Gill, 1994). Accordingly, in Gill's (1994) study, American participants showed better performance when hearing the American speaker, than when hearing a British or Malaysian speaker. Also, speaker's accent has been shown to be one aspect that influences a native speaker's evaluation of non-native speakers (Reddington, 2008). Moreover, as predicted by hypothesis H_{1b}, the majority of the participants chose the native speaker over the non-native speaker, justifying that choice, most often, by saying that the native speaker's accent "was easier to understand." This could reflect the accent's association with a particular group and thereby it can carry social stereotypes associated with that group (Bresnahan et al., 2002).

Moreover, people have a tendency to show a stronger identification with members of their own group. This fact is in accordance with participants' evaluation of the speakers' communication skills. As predicted in hypothesis H_{1a}, besides attaining significantly higher scores overall, the native speaker had significantly higher scores than the non-native speaker on specific items related to speech delivery, such as: "enunciated clearly", "expressed ideas and thoughts clearly;" "lacked skills in explaining difficult concepts," and "the speaker's accent was hard to understand," which could be related to the influence of the speakers' attributed nationality (Rubin et al., 1999). This could also be understood in terms of stereotype, in the way that both speakers gave the same information[9],

[9] The changes made by the non-native speaker were minor; she excluded less than 5 sentences total from the transcripts made from the native speaker's lectures, and added less than 10 words total to her lectures. Therefore, it

On the other hand, this could also be understood in part because accented speech may require more cognitive effort from listeners in order to understand the message (Munro & Derwing, 1995); therefore, there could be a need for "replaying" part or all of the message from working memory, which makes students prefer native speakers to non-native ones. This "harder work" is proposed by the cited authors as one possible explanation for poorer evaluations given to non-native speakers.

As indicated by the regression analyses, the native speaker's communication skills were a predictor of accuracy for video: the better they evaluated the native speaker's communication skills, the higher they scored on questions related to her videos. Furthermore, regression analyses indicated that the choice between the two speakers was a significant predictor of inference strength after the native speaker's lectures, so those who chose the native speaker made stronger inferences after the native speaker's lectures than those who chose the non-native speaker.

These findings are in accordance with previous research, in which participants heard the same audiotape given by an English native speaker (Rubin, 1992; Rubin et al., 1999). While listening, they saw a picture of either an apparently Caucasian or a Chinese person, identified as the speaker, and following the lecture, participants completed a cloze test of listening comprehension. Participants had a worse performance after seeing the Chinese picture, which was suggested as being a result of the visual identification of the instructor as Asian.

However, it is important to note that, among the present study's participants who preferred the non-native speaker, half of them justified their choice more in terms of teaching

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cannot be said that the concepts were explained differently, if both speakers were almost following exactly the same transcript.

skills – more description, clarity – than in terms of language accent[10]. Therefore, perhaps non-native speakers, aware of the different English accent that they might have from native speakers, should consider a way to compensate for this difference, in terms of having appropriate teacher training, in order to still be effective instructors (Fleisher et al., 2002; Smith, Downey, & Cox, 1999).

It is suggested that training with accent instruction could enhance participants' empathy and willingness to interact with non-native speakers (Derwing, Rossiter, & Munro, 2002). However, in the present study, the majority of the participants, although only in their freshman year, had already had classes with non-native speakers and rated this experience as moderately good. Nonetheless, the majority of them still seem to prefer the native speaker because of language issues. However, the overall ratings of the non-native speaker, although worse than for the native speaker, were not considered poor.

Effects of Speaker's Accent and Familiarity with the Topic on Listening Comprehension

A previous study indicates that an important factor that helps listening comprehension in a second language is the familiarity with the topic, from either having background knowledge or reading the material to be discussed beforehand (Hasan, 2000). Although it was not originally a

[10] Although the majority of the participants indicated that clarity in speech was the aspect of lecturer's delivery that is most helpful for their understanding when they are listening to a lecture, this fact should be interpreted with caution. Participants answered the question "when you hear a class lecture, what aspects of the teacher's delivery help your understanding?" right after making the evaluations of the speakers' communication skills. That being said, their answer to that question could have been influenced by their evaluation of the speakers. Regardless of this fact, it is important to note the reference to "teacher's enthusiasm," "gestures," and "examples and repetition," as aspects that help their understanding.

purpose of this study to examine effects of familiarity with the topic, participants differed in their performance on the listening comprehension task according to their reported previous knowledge of the lecture topics.[11] Based on results obtained in the present study, it seems that the role played by previous knowledge is important for listening comprehension in one's native language, especially when the lecture is in an English non-native-accented speech.

Participants reporting familiarity with the topic scored significantly higher on factual questions than participants unfamiliar with the topic. However, it is important to note that the groups differed significantly when they heard the lectures with the non-native speaker, but not for lectures with the native speaker. From this perspective, based on Hasan's (2000) study, in terms of importance of familiarity with the topic as a listening strategy, there seem to be similarities between second language learners listening to lectures in their second language (L2), and participants listening to lectures in their native language (L1), but given by a non-native speaker. Both groups show enhanced accuracy in situations where they have a prior knowledge about the topic. Therefore, potential difficulties in understanding the speaker, by reason of either the listeners' lack of language proficiency (second language learners) (Hasan, 2000), or different accent (listening in L1) (Anderson & Lynch, 1988), could be diminished if listeners have prior exposure to the topic of the lecture.

From this perspective, hypothesis H_{2a} predicted that participants would show better performance on both factual and inference questions from lectures given by the native speaker

[11] Speakers were chosen to be from the Department of Entomology because, as Freshmen psychology students, participants would probably not have taken classes in this field, therefore, extensive familiarity with the topic was not expected. Additionally, for the construction of the stimuli, the speakers were asked to give lectures requiring no familiarity with the topic, as if given to an introductory Entomology class.

than those by the non-native speaker. When considering all participants together, the results were in the predicted direction, although they were not significant. This can be understood in terms of the polystemic speech perception approach (Hawkins, 2003), according to which, although listeners might have language knowledge, it is not necessary to recognize every single word in order to attain meaning. Therefore, even though the non-native speaker's accent differed from that of the participants', it was not as critical a factor as it could otherwise be in reducing their understanding of the lectures.

Participants differed in terms of their familiarity with the topic in different ways, for the two different types of questions. For the factual questions, the groups differed significantly when answering questions from the non-native speaker's lectures, whereas for the inference questions, the groups differed in questions from the native speaker's lecture.

From this perspective, it could be argued that inference questions overall are more difficult than factual ones, because they involve the situation model level of representation, rather than only the lower textbase level (Kintsch, 1998). Thus, when processing the lectures given by the non-native speaker, the difficulty of the task per se, due to the different accent, made access to previous knowledge harder work for those reporting familiarity with the topic. It is suggested that accessibility of previous knowledge constitutes a fundamental prerequisite for drawing inferences (Kispal, 2008; Rai, Loschky, Harris, Peck, & Cook, in press).

Even though those participants unfamiliar with the topic drew stronger inferences from the non-native's lectures than from the native's lectures, this difference was not significant. Therefore, as this task was more difficult for these participants because they did not have much knowledge to access, the speaker's accent was not a differentiating factor in their performance.

Furthermore, in the present study, there was no speaker effect on reaction time, although participants overall took nonsignificantly longer to answer questions from lectures given by the non-native speaker in the audio only condition, which partially supports hypothesis H_{3a}, in terms of direction. However, the fact that this effect was not significant is consistent with the notion that initially there may be an increase in the required time to process information when the speaker's accent differs from a listener's, but that listeners can adapt to it quickly (Clarke & Garrett, 2004; Munro & Derwing, 1995).

In addition, for inference questions, participants familiar with the topic took longer than participants unfamiliar with the topic, which could be attributed to the fact that the former, having a more richly elaborated knowledge structure, needed more time to access and search that knowledge and then draw inferences. However, this difference was not significant, so such an interpretation should be made cautiously.

As indicated in the results, there was a two-way speaker by lecture mode interaction for reaction time to answer factual questions among participants unfamiliar with the topic. Those participants responded faster when having access to visual cues from the non-native speaker, whereas, those hearing the native speaker responded faster under the audio only condition. This result can be explained in the following way. For the non-native speaker GTA, as her accent differed from participants', the visual information may have helped them decoding the auditory stimuli, so that the time required to answer the questions was shortened when these participants had access to visual cues for lectures given by this speaker. It is noteworthy to mention that there was no significant interaction for those familiar with the topic, namely, their performance in terms of reaction time for factual questions showed the same pattern as those with no familiarity.

Access to Visual Cues

Based on previous studies (Goldin-Meadow, 1999; Kellerman, 1992; Sueyoshi & Hardison, 2005), hypothesis H_{2b} predicted that participants would show better performance on both factual and inference questions when having access to visual cues than in the audio only condition. Although no significant main effect of lecture mode was found for either factual questions or inference questions, participants did show a slightly better performance for both types of questions when having access to visual cues.

In addition, the fact that the topics of the lectures did not require visual information, this fact could also be understood in accordance with the polystemic speech perception approach proposed by Hawkins (2003). As participants had knowledge about the language, they were able to understand the lectures even in the absence of visual cues. Therefore, it could be suggested that the knowledge of the language per se allowed participants to construct the meaning of the message, regardless of the lecture mode. The context of what was being said by the speakers, and the fact that the stimuli were lectures instead of isolated words, could have enhanced participants' understanding (Munro & Derwing, 1995).

Moreover, hypothesis H_{3b} predicted shorter reaction times when having access to visual cues than under the audio-only condition. However, this hypothesis was not supported. It is interesting to note that, although for factual questions there was no main effect of lecture mode on reaction time, this effect was present for the time to judge inference strength, which could be an indication that answering the two types of questions involves different cognitive processes. While judging inference strength, participants answered faster under the audio-only condition, regardless of speaker or familiarity with the topic; for factual questions, on the other hand, participants were indeed faster under audio-only condition but only when hearing the lectures

given by the native speaker, regardless of familiarity with the topic, although these results from factual questions were not significant. This finding could be tentatively understood in terms of the idea that access to visual cues added more input information, so instead of reducing the time to draw inferences, in fact, it increased that time.

Additionally, especially when the speaker has a non-native accent, the visual information seems to play an important role. Overall, the non-native speaker audio only condition produced the longest reaction times for factual questions, both for those familiar and unfamiliar with the topic. Likewise, participants from both groups showed their worst performance in answering factual questions under this condition. Therefore, it seems that although not showing a significant main effect of lecture mode on accuracy, participants showed a trend to have more difficulties with the lectures given by the non-native speaker when they had no access to visual cues.

Limitations and Strengths

This study has extended previous research (Jung, 2003; Kellerman, 1992; Nicoladis, 2007; Sueyoshi & Hardison, 2005) that investigated how gestures could improve listening comprehension by second language learners to focus on English native speakers' listening comprehension and memory. The increase in the number of non-native English speaking instructors in American universities was reflected in the large number of the present first-year college participants who had already had experience with non-native speaker instructors. Therefore, one important implication of this study is that it offers tools for thinking about different factors that could have an influence on the interaction between students and their instructors, especially between English native-speakers and English non-native speaker instructors.

In contrast to Sueyoshi and Hardison (2005), the present study used a within-subjects design, with all participants listening to the same lectures, with different parts given by the native and the non-native speaker, with everyone hearing some material in the audio only and some in the video conditions. The increased power from the within-subjects design strengthened the obtained results. Moreover, no previous studies have measured reaction time for answering questions derived from lectures, while comparing listeners' performance under audio-only condition and when having access to visual cues. Results from this study indicated that this is an important point, especially when considering different types of questions, such as factual versus inference – which operate differently – and speaker's accent as well.

The fact that there was no significant main effect of lecture mode on either accuracy for factual questions or strength of drawing inferences could be understood in light of how the lecture materials were selected. For this study, the speakers were asked to choose topics that did not require visual information to understand, in order to both not prime results in direction of the visual condition, and also to more closely approximate real classroom settings, where not all lectures require specific visual information.

Although it was not an initial primary focus of this study to investigate the role of familiarity with the topic as a factor influencing participants' performance, this finding was of great importance. It confirmed notions that familiarity with the topic, even measured as grossly as "Did you have prior knowledge of this topic?" does play an important role in listening comprehension. Therefore, although it is well-known that previous knowledge can have a significant impact on students' understanding, findings from this study have important implications for instructors, particularly for L2 speakers.

Future Research

The focus of the present study was on lecture comprehension and GTA evaluation by native English-speaking students, because of the relative lack of studies with this population considering listening to academic lectures given by non-native speakers. However, considering the increasing number of international students in American universities, studies with second language learners are also of great importance. It would be interesting to investigate the influence of the access to visual cues on listening comprehension for these students as well.

There may be some common threads between the population tested in the present study and international students. The importance of prior knowledge might be a fundamental factor for both groups. From this perspective, even though both groups may face some difficulties in understanding an academic lecture, either due to lack of language proficiency (second language learners) (Hasan, 2000), or different accent (listening in L1) (Anderson & Lynch, 1988), those students seem to enhance their capability of understanding lectures if they have access to the topic beforehand.

Moreover, it is suggested that second-language learners, by reason of their relative lack of knowledge in their L2, may have a greater need for the presence of kinesic behavior (body movements) from the speaker toward them as listeners (Kellerman, 1992). A previous study indicated that international students responded positively to their professors when they used gestures in the classroom (Sime, 2006). Gestures may create a positive atmosphere that encourages participation and thus may help improve learning (Allen, 1999). Besides, as non-native speakers might not have attained high levels of language proficiency, it could be expected that gestures facilitate their understanding even more for those native speakers because it might enrich the contextual information. This would facilitate connections between what is being heard

and previous knowledge, which can be important for both listeners and speakers (Hawkins, 2003).

Additionally, it would be interesting to compare international students' performance on a listening comprehension task when having lectures given by an English native speaker, an English non-native speaker, with a different L1 from participants', and an English non-native speaker, who has the same native language as the participants. This would allow a comparison between English as second language learners' performance when hearing academic lectures in their L2, but given by two speakers with different accents (English native speaker and English non-native speaker with a different L1) and by one speaker with the same accent as the participants, but speaking in their L2.

In terms of the construction of the stimuli, although it is difficult to control speakers' individual differences in terms of the number of gestures produced, future studies should attempt to increase the ecological validity by trying to record lectures in the natural setting of an actual class session. By doing so, the possibility of inhibition from speaking only to a video camera might be diminished and lecturers might act even more naturally.

Additionally, like previous studies (Sueyoshi & Hardison, 2005), it would be interesting to split the video mode into two conditions: face and gestures; and facial only. By doing this, the relative roles of information purely from facial expressions, especially lip movements, can be separated from arm and hand gestures, in terms of how each can enhance understanding. In the present study, the contribution of facial and gestural cues could not be separated.

Differently from previous studies, this study measured the time participants spent in answering questions derived from the lectures. Likewise, it also verified participants' performance in answering different types of questions, specifically, factual questions and

pragmatic inference. Results indicated different patterns of reaction time, when considering speaker, inference type, and familiarity with the topic. From this perspective, considering the lack of studies measuring reaction time with the purpose employed in this study, it would be noteworthy that future studies also consider its measurement. Furthermore, it would be interesting to conduct more studies considering the influence of visual cues, and speaker's accent on answering different types of inference questions, for example, bridging and pragmatic (Rai et al., in press).

All in all, this study tried to combine different factors involved in listening comprehension to identify which ones can enhance students' understanding of academic lectures. It is important in that it suggests tools for thinking about how different aspects of a lecture can contribute to a satisfactory learning process.

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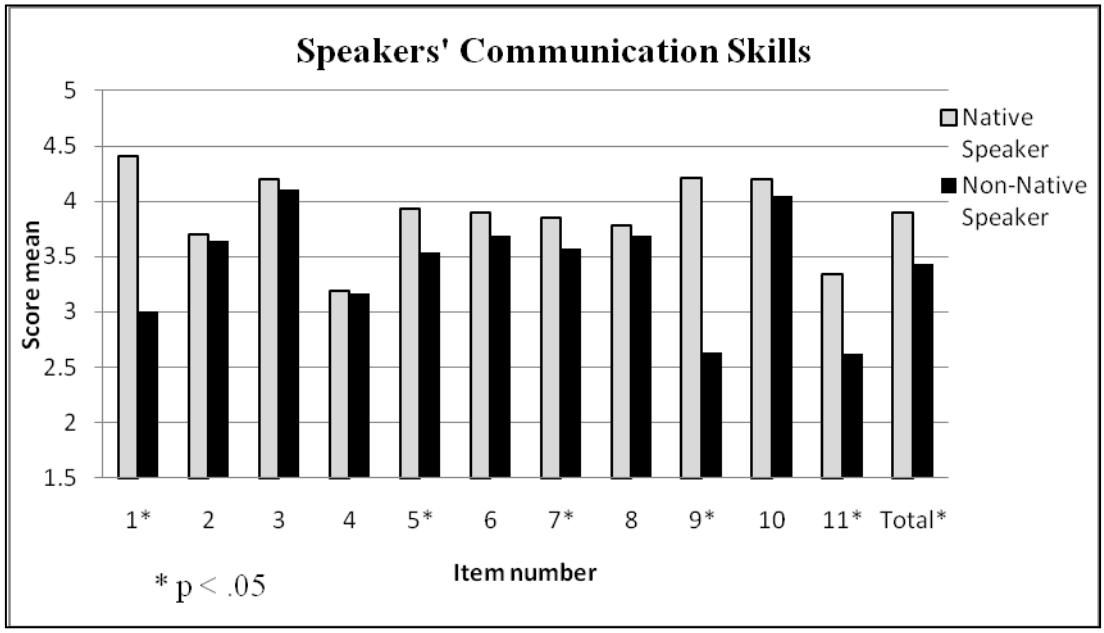
Figure 1.



Note: Scales ranged from 1 – 5, with higher scores indicate better communication skills. Items number 1, 3, 5, 10, and 11 were reverse-coded.

Figure 2.

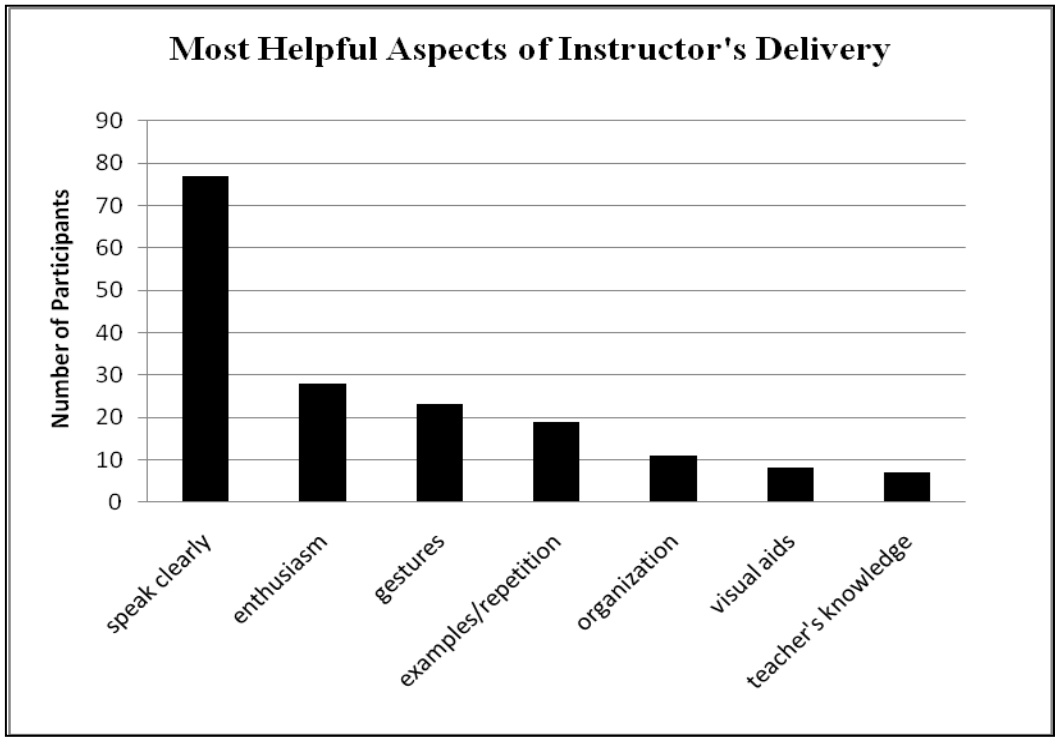
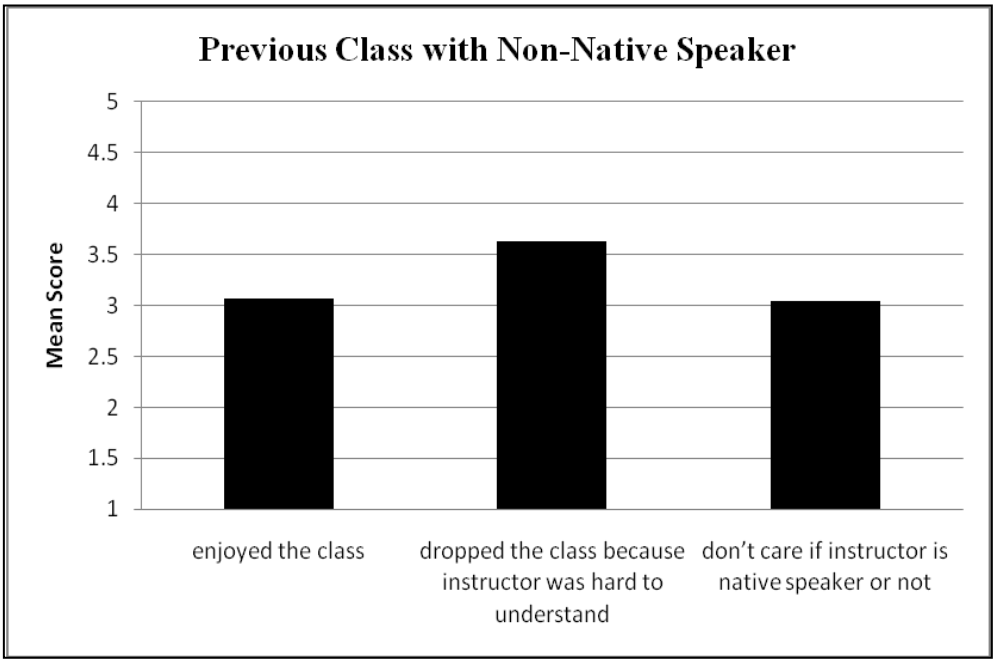

Most Helpful Aspects of Instructor's Delivery
Number of Participants
90
80
70
60
50
40
30
20
10
0
speak clearly
enthusiasm
gestures
examples/repetition
organization
visual aids
teacher's knowledge

Figure 3.



Note: Scale ranged from 1(strongly agree) through 5 (strongly disagree). Items 1 and 3 were reverse-coded, so that higher scores indicate better experience.

Figure 4.

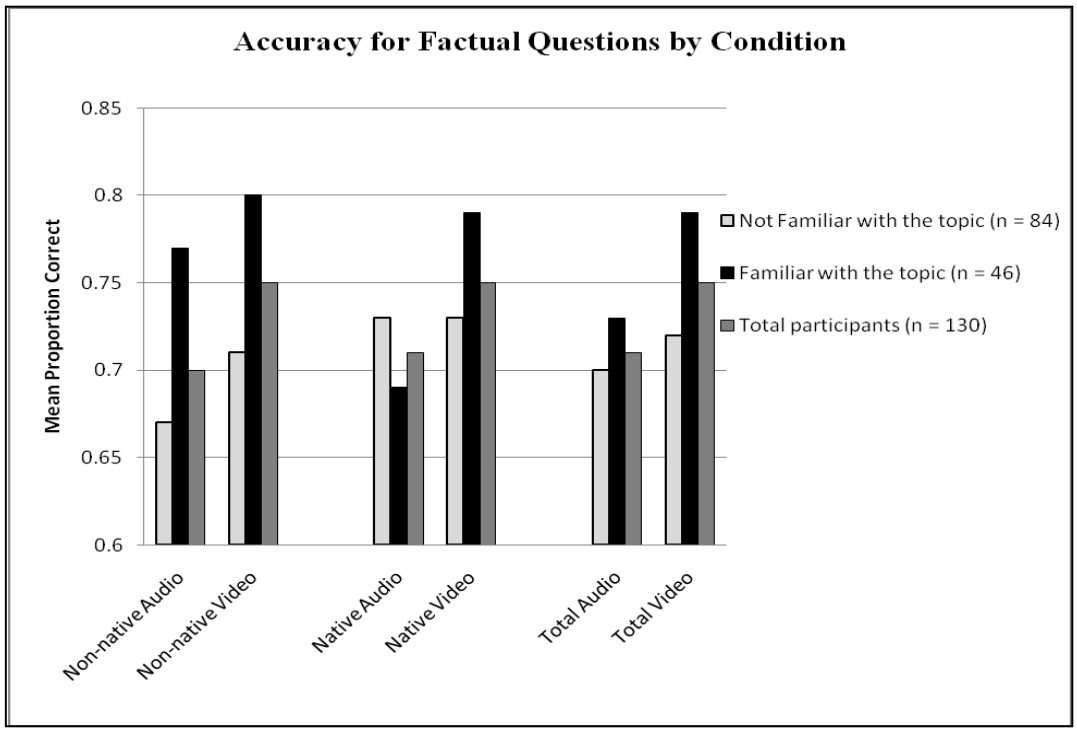
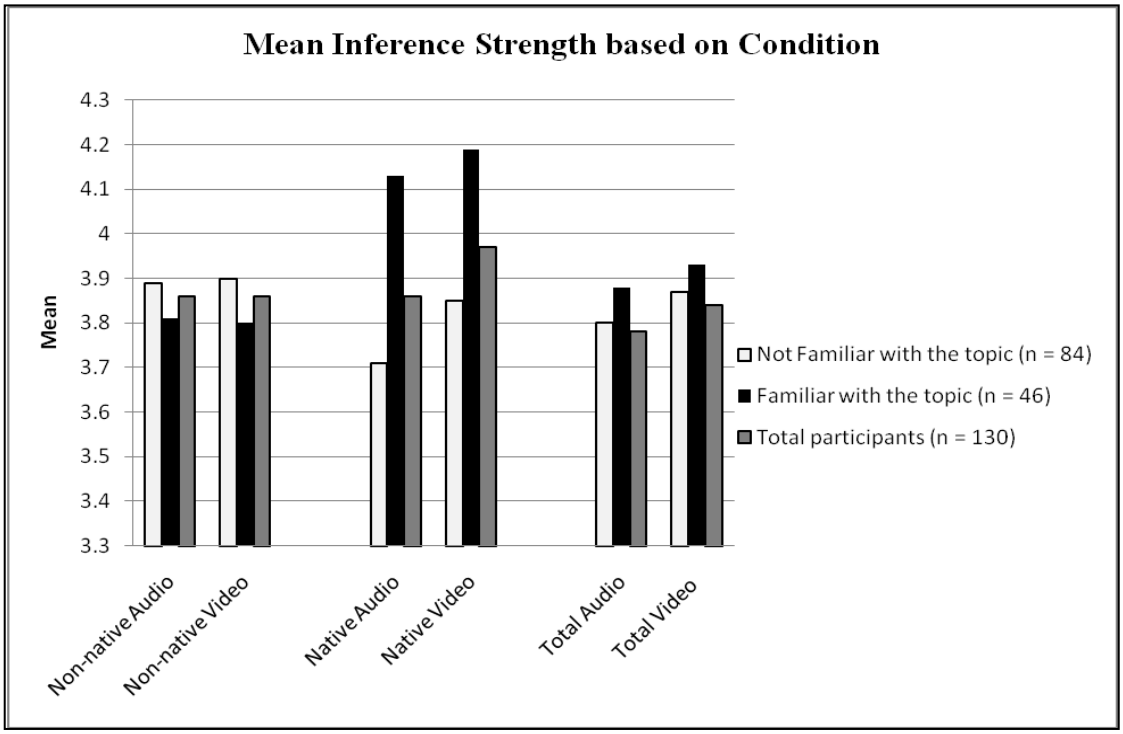

Accuracy for Factual Questions by Condition
Mean Proportion Correct
0.85
0.8
0.75
0.7
0.65
0.6
Non-native Audio
Non-native Video
Native Audio
Native Video
Total Audio
Total Video
Not Familiar with the topic (n = 84)
Familiar with the topic (n = 46)
Total participants (n = 130)

Figure 5.



Note: Scales ranged from 1 through 5, so that higher score means higher inference strength.

Figure 6.

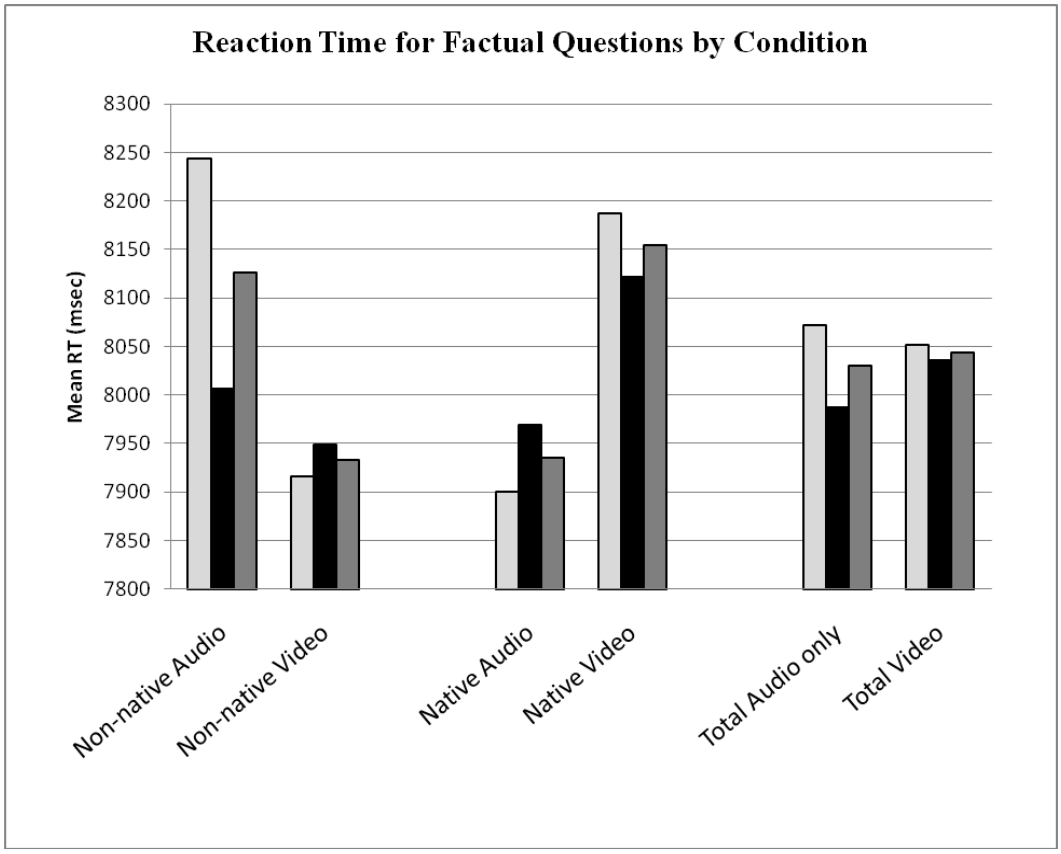

Reaction Time for Factual Questions by Condition
Mean RT (msec)
8300
8250
8200
8150
8100
8050
8000
7950
7900
7850
7800
Non-native Audio
Non-native Video
Native Audio
Native Video
Total Audio only
Total Video

Figure 7.

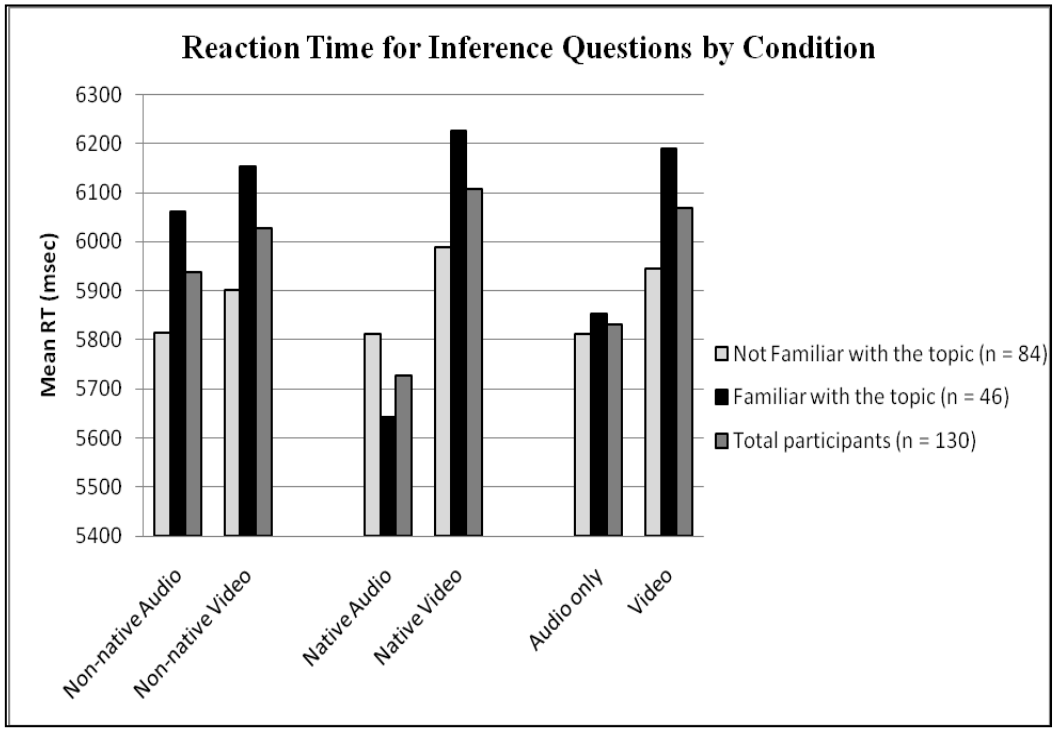

Reaction Time for Inference Questions by Condition
Mean RT (msec)
6300
6200
6100
6000
5900
5800
5700
5600
5500
5400
Non-native Audio
Non-native Video
Native Audio
Native Video
Audio only
Video
Not Familiar with the topic (n = 84)
Familiar with the topic (n = 46)
Total participants (n = 130)

Table 1.

Guessed Speakers' Country

Country	Native Speaker	%	Non-native Speaker	%
US	117	90.0	4	3.1
Spanish-speaking country	2	1.5	52	40.0
Brazil	1	.8	9	6.9
Asia	1	.8	41	31.5
Europe	6	4.6	12	9.2
Africa	0	0	1	.8
"no idea"	2	1.5	10	7.7

Table 2.

Participants' Motives and Choice Between the Two Speakers

Reason	Native Speaker (n = 109) Frequency	Non-Native Speaker (n = 18) Frequency
Speaker's accent easier to understand	87	2
Less information	10	0
More description/clarity	4	9
Prefer no accent	6	0
More enthusiasm	4	2
Fluency/knowledge	4	2
Interesting topic	2	1
Need to pay more attention because of accent	3	2
More likely to be relatable to students	3	0
Did not have to think about what she said	2	0

Note. Three participants mentioned that they did not know which one to choose. The total number of participants per reason exceeds the number of participants who would choose the native speaker because some of them mentioned more than one reason for their choice.

Table 3.

Number of Factual Questions Answered Correctly by Speaker and Lecture mode

	Unfamiliar with the topic (n = 84)			Familiar with the topic (n = 46)			Total participants (n = 130)		
Condition	*M*	*SD*	*%*	*M*	*SD*	*%*	*M*	*SD*	*%*
Non-native speaker									
Audio	10.60	4.93	67	12.97	5.62	77	11.44	5.29	70
Video	11.11	5.54	71	13.78	5.62	80	12.06	5.69	75
Total Accuracy	21.72	9.18	69	26.76	10.26	78	23.50	9.84	73
Native speaker									
Audio	12.41	5.28	73	11.97	5.59	69	12.26	5.37	71
Video	12.02	5.94	73	12.58	4.96	79	12.22	5.60	75
Total Accuracy	24.44	9.87	73	24.56	9.26	74	24.84	9.62	73
Total Audio only	23.02	5.28	70	24.95	5.20	73	23.70	5.31	71
Total Video	23.14	5.86	72	26.36	4.36	79	24.28	5.58	75

Note. Significant differences between familiarity groups were found for lectures given by the non-native speaker, but not for the native speaker.

No significant differences were found for lecture mode nor for speaker for the total number of participants; however, there were significant differences between those familiar and those unfamiliar with the topic.

Table 4.

Mean Inference Strength by Speaker and Lecture Mode

Condition	Unfamiliar with the topic (n = 84) *M*	*SD*	Familiar with the topic (n = 46) *M*	*SD*	Total Participants (n = 130) *M*	*SD*
Non-native speaker						
Audio	3.89	.87	3.81	.79	3.86	.84
Video	3.90	.79	3.80	.70	3.86	.76
Total	3.90	.72	3.80	.62	3.85	.69
Native Speaker						
Audio	3.71	.87	4.13	.79	3.86	.87
Video	3.85	.83	4.19	.68	3.97	.80
Total	3.78	.70	4.14	.58	3.90	.69
Total Audio only	3.80	.60	3.88	.47	3.78	.54
Total Video	3.87	.50	3.93	.52	3.84	.51

Note. Significant differences between familiarity groups were found for videos given by the native speaker, but not for the non-native speaker.

Table 5.

Mean Reaction Time for Answering Factual Questions, by Speaker and Lecture Mode

	Unfamiliar with the topic (n = 84)		Familiar with the topic (n = 46)		Total Participants (n = 130)	
Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*
Non-native speaker						
Audio	8244.06	196.56	8006.13	262.43	8126.00	163.94
Video	7916.01	201.64	7949.35	269.22	7932.68	168.18
RT Total	8080.04	162.85	7977.74	217.43	8028.89	135.83
Native speaker						
Audio	7900.04	173.49	7969.41	231.63	7934.73	144.70
Video	8187.11	175.73	8121.95	234.63	8154.53	146.58
RT Total	8043.58	148.89	8045.68	198.78	8044.63	124.18
Audio only	8072.05	154.87	7987.77	206.77	8029.91	129.16
Video	8051.57	166.50	8035.65	222.30	8043.60	138.87

Note. (Data in msec). There was a significant speaker by mode interaction for the Unfamiliar group. However, there were no significant effects for the Familiar group.

Table 6.

Mean Reaction Time for Answering Inference Questions, by Speaker and Lecture Mode

	Unfamiliar with the topic (n = 84)		Familiar with the topic (n = 46)		Total Participants (n = 130)	
Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*
Non-native speaker						
Audio	5813.13	166.76	6060.79	225.35	5936.96	140.17
Video	5901.76	193.64	6153.96	261.68	6027.85	162.77
Total	5857.44	151.32	6107.37	204.49	5982.40	127.19
Native speaker						
Audio	5812.08	170.84	5642.88	230.87	5727.47	143.60
Video	5989.68	214.30	6227.01	289.60	6108.35	180.13
Total	5900.87	165.20	5934.95	223.24	5917.91	138.86
Audio only	5812.60	139.90	5851.83	189.05	5932.21	117.59
Video	5945.72	164.34	6190.48	222.08	6068.10	138.14

Note. (Data in msec). There was a main effect of mode on reaction time for inference questions.

Table 7.

Hierarchical Regression Analysis Using Native Speaker's and Non-native Speaker's Communication Skills to Predict Accuracy for Video

Regression Step	β	t	p	R^2	R^2 change
Step 1				.035	.035
Native speaker skills	.186	1.994	.049		
Non-native speaker skills	-.087	-.929	.355		
Step 2				.044	.009
Native speaker skills x Non-native speaker skills	.108	1.018	.311		

Note. Evaluation of the native speakers' communication skills predicted accuracy for questions related to lectures under video condition.

Table 8.

Hierarchical Regression Analysis Using Native Speaker's and Non-native speaker's Communication Skills to Predict Accuracy for Audio

Regression Step	*β*	*t*	*p*	R^2	R^2 change
Step 1				.053	.053
Native speaker skills	.169	1.819	.071		
Non-native speaker skills	.123	1.329	.186		
Step 2				.054	.001
Native speaker skills x Non-native speaker skills	-.045	-.427	.670		

Note. Evaluations of speakers' communication skills were not predictors of accuracy for questions related to lectures under audio only condition.

Table 9.

Hierarchical Regression Analysis Using Speaker Choice, Native Speaker Skills to Predict Inference Strength for Lectures given by the Native Speaker

Regression Step	*β*	*t*	*p*	R^2	R^2 change
Step 1				.033	.033
Native speaker skills	.007	.082	.935		
Speaker Choice	-.181	-1.993	.049*		
Step 2				.044	.009
Native speaker skills x Non-native speaker skills	.323	1.178	.241		

Note. Speaker choice predicted inference strength for lectures given by the native speaker

Table 10.

Hierarchical Regression Analysis Using Non-native Speaker Skills, Speaker Choice to Predict Inference Strength for Lectures given by the Non-native Speaker

Regression Step	*β*	*t*	*p*	R^2	R^2 change
Step 1				.020	.020
Non-native speaker skills	.140	1.550	.124		
Speaker Choice	.012	.136	.892		
Step 2				.020	.000
Native speaker skills x Non-native speaker skills	-.021	-.065	.948		

Note. Non-native speaker skills and Speaker choice are not predictors of inference for lectures given by the non-native speaker.

Appendix A - Outline of the Lectures

Lecture 1: What is Entomology; what you can do as an Entomologist

- What is Entomology
- Different fields studies within entomology
    - Medical entomology: what it is; problems associated with insects, such as the fact that they can carry a parasite disease (e.g. malaria)
    - Aspects related to food, such as damage to crops, and stored insect pests
    - Home pests
    - Beneficial insects found in crops

Lecture 2: General Background of Insects

- Large proportion among all species: reason for important diversity on Earth
- Ratio of human beings : insects
- In terms of area, the relation between the number of insect species per acre on Earth
- We are surrounded by insects even though we may not perceive them all the time
- How many insect species are there on Earth? An estimate
- Importance of the study of insects as being an important part of the ecosystem

Lecture 3: Basic Structure of Insects

- Morphology of insects in general
- Three major regions:
    - Head: the most sensory organs, such as the eyes (diversity among insects), the mouth parts (variable), antenna (roles)

- Thorax: where the appendages are located; insects that have wings (number); number of legs
- Abdomen: reproductive and digestive organs; no legs or wings come off insects' abdomen

Lecture 4: Specific Orders

- Insects are very diverse: classification considering how they have developed, what they feed on, how they look
- Four major orders:
    - Coleoptera (beetles): one of the largest; found in almost all habitats; typical wing structures; feed on a variety of things
    - Lepidoptera (butterflies and moths): easy to identify because of their large and showing wings. Differences between butterflies and moths and reason for these differences. Similarities between butterflies and moths: they feed on same things.
    - Diptera (flies): very common, tend to be scavengers; variable mouth parts; typical wings and their role.
    - Hymenoptera (wasps, bees, ants): tend to be not winged, but some do have two pairs.

Appendix B - Demographic Questionnaire

P # _____

Demographic Questionnaire

1. Age: _____ years Place of birth (city, state, country): _____
   Gender: M F

2. Year in school (circle one): Freshman Sophomore Junior Senior Graduate

3. What is your major? _____

4. Is English your native language (i.e. the very first language you learned)? Yes No

   If not, what is your first language? _____

5. Please, list all languages you speak, understand, are formally studying, or have studied in the past:

   _____

   _____

6. Please, list all countries in which you have lived, traveled, or vacationed, the duration of your stay, and your age during that time.

   _____

   _____

7. In which classes are you enrolled in this semester?

   _____

   _____

   _____

Appendix C - Questions (Listening Comprehension Task)

Questions for Video 1

1) What is Entomology?

a. The biological study of the functions of living organisms and their parts.

b. The study of the chemical substances and vital processes occurring in living organisms.

*[12]c. The study of insects.

d. The science of the shape and structure of organisms and their parts.

2) Which of the following is NOT mentioned by the lecturer, as a field that can be studied in Entomology?

a. Food

b. Medical issues

c. Beneficial insects

*d. Forensic science

3) A medical entomologist…

*a. Studies insects that may affect living organisms in a negative way.

b. Studies arthropods that have beneficial impact for humans.

c. Studies the negative impact of insects on crops.

d. none of the above.

4) If an insect species "vectors," what does that mean?

*a. It carries diseases

b. It destroys human food supplies

c. It is beneficial to humans

d. It does analytic geometry

5) Which of the following is an example of insects that transmit disease?

a. Flies

b. Moths

*c. Bed bugs

d. Ladybugs

6) On what do bed bugs and fleas feed?

[12] * correct answer

a. Plants

*b. Humans

c. Other insects

d. Humans and other insects

7) Which of the following is an example of insects that can carry disease to other organisms?

*a. Mosquitoes

b. Fleas

c. Butterflies

d. Flies

8) Malaria is transmitted:

a. From human to human

*b. From insect to human

c. From human to insect

d. From insect to insect

9) Up to _____ of all food crops grown worldwide is damaged or consumed by insects each year.

a.30%

b.60%

c.50%

*d.40%

10) An example of an insect that can ruin a whole pasture is:

a. Flies

*b. Flower beetles

c. Moths

d. Butterflies

11) Insects most notorious for damaging structures like houses are:

a. Mosquitoes

b. Stink bugs

c. Cockroaches

*d. Termites

12) According to the lecturer, where could we find the "beneficial insects"?

a. In large granaries

*b. In crops

c. In parks

d. none of the above

13) An example of a beneficial insect is:

a. Fleas

b. Mosquito

*c. Lady beetle (ladybugs)

d. Butterfly

14) On what do lady bugs feed?

*a. Destructive insects

b. Human

c. Granaries

d. Crops

15) Termites chew on wood and other building material

**[13]definitely true 1 2 3 4 5 definitely false

16) When a mosquito bites, it can transmit a parasite that causes malaria.

**definitely true 1 2 3 4 5 definitely false

17) Medical entomologists might study other arthropods than insects that cause disease (e.g., spiders, ticks).

**definitely true 1 2 3 4 5 definitely false

18) About 40% of food is destroyed by insect pests.

**definitely true 1 2 3 4 5 definitely false

Questions for Video 2

1) What percentage of all known animal species are insects?

a. 50%

b. 85%

*c. 75%

d. 65%

2) According to the lecturer, the large number of species of insects contributes to:

*a. Diversity on Earth.

b. Increased damage to the crops.

c. Higher rates of epidemics.

d. none of the above.

[13] ** question reverse coded

3) What is the ratio between number of humans and number of insects?

a. 400 million insects for every human being.

b. 300 million humans for every insect.

c. 300 million insects for every human being.

*d. 200 million insects for every human being.

4) How many insects would be in each acre if we split the planet in equal acres?

*a. 400 million

b. 300 billion

c. 500 million

d. 500 billion

5) There are _____ known species of insects on Earth.

a. 100 thousand

b. 200 thousand

*c. 300 thousand

d. 400 thousand

6) Why are scientists not 100% sure about the number of insects that exist on Earth?

a. Because this number is growing.

*b. Because there are some areas on Earth that are hard for human to go.

c. Because this number is decreasing.

d. Scientists do know the number of insects on Earth.

7) How many insect species are estimated to exist on Earth?

a. 3 million to 4 million

*b. 5 million to 8 million

c. 8 million to 10 million

d. 10 million to 15 million

****[14]8) Scientists really don't know nearly how many insect species there are.**

definitely true 1 2 3 4 5 definitely false

****9) Scientists are confident that there are millions of undiscovered insect species.**

definitely true 1 2 3 4 5 definitely false

10) There are no insect species in areas where it is hard for scientists to get.

definitely true 1 2 3 4 5 definitely false

[14] ** question reverse coded

Questions for Video 3

1) Which of the following is NOT considered as one major body region of insects?

a. Thorax

b. Head

*c. Legs

d. Abdomen

2) Which region of insects has the most sensory organs?

a. Thorax

*b. Head

c. Abdomen

d. none of the above

3) Which insect has very large eyes?

*a. Dragonflies

b. Butterflies

c. Fleas

d. Aphids

4) Why do dragon flies have very large eyes?

a. Because they are prey and need to see hunters at long distances.

*b. Because they are active hunters and need to catch prey in the air.

c. To differentiate sunlight and darkness.

d. To detect movement around themselves.

5) Why do insects that live on the ground have small eyes?

*a. Because they don't need to see a lot.

b. Because they are too small.

c. Because they are hunters.

d. none of the above.

6) Which part of the mouth of some insects can be the most similar to humans'?

a. Tongue

*b. Jaws

c. Lips

d. Oral cavity

7) Why do some insects have mandibles?

*a. To bite and chew food.

b. To crowd on the ground.

c. To dig in the dirt.

d. To grasp prey

8) What is a "proboscis"?

a. a sponging mouth

*b. a beak

c. an insect mouth similar to a human's mouth

d. none of the above

9) Overall, insects that have a beak feed on _____

a. other insects

b. grains

*c. liquids within some substance

d. plants

10) What is the function of the beak for stink bugs?

*a. To pierce the plant and pull out the liquid.

b. To pierce humans and pull out the blood.

c. To sponge up liquid.

d. none of the above.

11) Which of the following insect does not have a beak?

a. Mosquitoes

*b. House flies

c. Aphids

d. Stink bugs

12) Which of the following insects feed on plants?

a. Mosquitoes

b. Flies

c. Aphids

*d. Stink bugs

13) The most important sensory structure in the insect is the _____

a. Thorax

b. Mouth

c. Eyes

*d. Antenna

14) Antennas are especially related to human's _____

a. Mouth

*b. Ears and nose

c. Vision

d. Motor sensitivity

15) How do some ants can communicate with each other?

a. By making a typical body movement.

b. By making a noise.

c. Ants do not communicate with each other.

*d. By their antennas.

16) On what body segment are the appendages located?

*a. Thorax

b. Abdomen

c. Head

d. Antenna

17) The body plan of insects is called:

a. Entomology

b. Taxonomy

*c. Morphology

d. Proboscis

18) Which of the following insects do not have wings?

a. Lady bugs

b. Flies

c. Mosquitoes

*d. Fleas

19) Where are the wings located on insects?

*a. Thorax

b. Head

c. Legs

d. Antenna

20) Which of the following is NOT true regarding the presence of wings on insects?

a. They can have no wings.

b. They can have 1 pair of wings.

c. They can have 2 pairs of wings.

*d. They can have 3 pairs of wings.

21) Which fact differentiates insects from all other organisms?

a. They can have antennas.

b. They can have a beak.

c. They can have wings.

*d. They can have 6 legs.

22) Where are the legs of insects located?

a. Head

b. Abdomen

*c. Thorax

d. Antenna

23) Where are the digestive organs in the insects located?

a. Head

*b. Thorax

c. Abdomen

d. none of the above

24) The abdomen of insects houses _____

*a. Reproduction organs

b. Legs

c. Wings

d. Head

25) All insects have similar eyes.

definitely true 1 2 3 4 5 definitely false

****[15]26) Insects that have a proboscis tend to feed on humans.**

definitely true 1 2 3 4 5 definitely false

27) Some insects have more body parts than simply the head, thorax, and abdomen.

definitely true 1 2 3 4 5 definitely false

****28) Other arthropods all have more than 6 legs.**

definitely true 1 2 3 4 5 definitely false

29) Dragonflies have the largest eyes of any insect.

definitely true 1 2 3 4 5 definitely false

[15] ** question reverse coded

Questions for Video 4

1) Which of the following is NOT an aspect considered in the classification of insects?

*a. How they developed.

b. How they interact with each other.

c. What they look like.

d. What they feed on

2) Which insect is NOT in the order of Hymenoptera?

a. Bees

*b. Beetles

c. Wasps

d. Ants

3) Which of the following is one of the largest groups of insects on Earth?

a. Flies

b. Ants

c. Butterflies

*d. Beetles

4) What is the "elytra" on beetles?

a. The term attributed to beetles' thorax.

b. The term attributed to beetles' antenna.

c. Beetles do not have elytra.

*d. The front wing that can fold over the delicate wings and protects them.

5) What do beetles NOT feed on?

a. Live plants

b. Decaying vegetation

c. Decaying flesh

*d. Human blood

6) Moths and Butterflies are differentiated from other orders of insects because of their distinctive _____

a. Antennas

b. Mouths

*c. Wings

d. Eyes

7) We can differentiate butterflies from moths based on _____

a. The number of legs

*b. The bright colors of their wings

c. Their habitats

d. Their size

8) Which of the following insects has fuzzy antenna?

a. Butterflies

b. Ants

*c. Moths

d. Beetles

9) Which insect does not have wings on its back?

a. Butterflies

b. Beetles

*c. Flies

d. Moths

10) What group of insects can be found in all habitats, from extreme cold to extreme hot?

*a. Beetles

b. Ants

c. Bees

d. Flies

11) Which of the following insects are easy to identify because of their large and showy wings?

a. Beetles

*b. Moths

c. Flies

d. Bees

12) Which of the following insects has a long, cylinder looking antenna, with little knob at the end?

*a. Butterflies

b. Ants

c. Moths

d. Fleas

13) Which of the following best describes the mouth of butterflies?

a. Their mouth is like a sponge, so that butterflies can absorb their food.

*b. Their mouth is a very long tube that can reach down to the flowers and pull out the nectar and pollen.

c. Their mouth is like a beak, so they can pierce the flower and pick up their food.

d. none of the above.

14) Which of the following are scavengers?

a. Mosquitoes

b. Wasps

*c. Flies

d. Beetles

15) What is the purpose of the knobby structures a fly has instead of a second set of wings?

a. Part of digestive system

*b. Flight stabilization

c. Pick up pollen

d. Store nectar

16) If you are at a picnic, which insect is most likely to appear and feed on your food?

a. Butterflies

b. Beetles

c. Wasps

*d. Flies

17) Which of the following is not an insect of the order Hymenoptera?

a. Wasps

b. Ants

*c. Beetles

d. Bees

18) When ants have wings, how many pairs do they have?

*a. Two

b. Three

c. Four

d. Ants do not have wings.

19) In which way do wasps' wings tend to be similar to flies' wings?

a. Number of wings.

b. The brightness of their wings.

*c. You can see the veins clearly.

d. Wasps do not have wings.

20) Which of the following have a sponging mouth?

a. Butterflies

b. Moths

*c. Flies

d. none of them has a sponging mouth.

21) Beetles do not have wings.

definitely true 1 2 3 4 5 definitely false

22) One often sees butterflies at night.

definitely true 1 2 3 4 5 definitely false

23) There are more insect species in the coleoptera, lepidoptera, diptera, and hymenoptera orders than all of the other insect orders.

definitely true 1 2 3 4 5 definitely false

24) There are more beetles (coleoptera) than lepidoptera, diptera, or hymenoptera.

definitely true 1 2 3 4 5 definitely false

25) There are more insect species in the coleoptera, lepidoptera, diptera, and hymenoptera orders than all of the other insect orders.

definitely true 1 2 3 4 5 definitely false

26) All insects that have wings have them located on back.

definitely true 1 2 3 4 5 definitely false

Appendix D - Instructor Communication Skills Survey

P # _____

Instructor Communication Skills

Directions: The statements below refer to your evaluation about each of the lecturers. For each statement, please indicate whether you (1) strongly agree, (2) agree, (3) neither agree or disagree, (4) disagree, (5) strongly agree.

I – The speaker with short hair, and wearing a "blue and black" shirt …	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree
• Enunciated clearly …….….....	1	2	3	4	5
• Spoke too rapidly ……	1	2	3	4	5
• Spoke loud enough ……...…..	1	2	3	4	5
• Covered too much material …….……...	1	2	3	4	5
• Expressed ideas and thoughts clearly …….	1	2	3	4	5
• Lacked good organization …….	1	2	3	4	5
• Lacked skills in explaining difficult concepts …….	1	2	3	4	5
• Used a vocabulary too advanced for this lecture …….	1	2	3	4	5
• Speaker's accent was hard to understand.……	1	2	3	4	5
• Was very knowledgeable about the material ……..….	1	2	3	4	5
• If it would be possible, I would like to take a class with this lecturer …….……..	1	2	3	4	5

- What country would you guess this speaker is from? _____

II – The speaker with long hair, and wearing a "gray" shirt …	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree
• Enunciated clearly …….….....	1	2	3	4	5
• Spoke too rapidly …….	1	2	3	4	5
• Spoke loud enough ……...…..	1	2	3	4	5
• Covered too much material …….……...	1	2	3	4	5
• Expressed ideas and thoughts clearly …….	1	2	3	4	5
• Lacked good organization …….	1	2	3	4	5
• Lacked skills in explaining difficult concepts …….	1	2	3	4	5
• Used a vocabulary too advanced for this lecture …….	1	2	3	4	5
• Speaker's accent was hard to understand.……	1	2	3	4	5
• Was very knowledgeable about the material …….….	1	2	3	4	5
• If it would be possible, I would like to take a class with this lecturer …….……..	1	2	3	4	5

- What country would you guess this speaker is from? _____

III – When you hear a class lecture, what aspects of the teacher's delivery help your understanding?

_____

_____

IV – If you were going to take classes in the Department of Entomology, who would be your first and second choices from among the lecturers in the present experiment? (the speaker with short hair and wearing a "blue and black" shirt"; the speaker with long hair and wearing "gray" shirt). Explain why.

1) _____

2) _____

Why?

_____

_____

V – Have you ever taken classes with a English non-native speaker

( ) YES ( ) NO

If you answered Yes, please answer the following statements:

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree
1) I really enjoyed this class ……...	1	2	3	4	5
2) I dropped this class because the instructor was too hard to understand…….....	1	2	3	4	5
3) Now, when searching for class to enroll, I don't care if the instructor is an English native speaker or English non-native speaker ……...……	1	2	3	4	5

VI - Have you ever taken a class at the Department of Entomology? Yes No

Were you familiar with the topics discussed by the lecturers? Yes No

If you answered “Yes” for the last question, which topic (s) did you have knowledge about before coming to this experiment?

_____

_____

Appendix E - Consent Form

KANSAS STATE UNIVERSITY

INFORMED CONSENT

PROJECT TITLE: Listening Comprehension to Academic Lecture

APPROVAL DATE OF PROJECT: November, 2009

PRINCIPAL INVESTIGATOR: CO-INVESTIGATOR(S): Dr. Richard Harris, Ph.D.
Patricia Barros

CONTACT AND PHONE FOR ANY PROBLEMS/QUESTIONS: Dr. Richard Harris, Ph.D.
(785) 532-0610
rjharris@ksu.edu

IRB CHAIR CONTACT/PHONE INFORMATION: Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

PURPOSE OF THE RESEARCH: The purpose of this study is to investigate the performance of native English-speaking college students on a listening comprehension task.

PROCEDURES OR METHODS TO BE USED: Participant will watch and/or hear mini-lectures, they will take a comprehension test, a demographic questionnaire, and a short survey about the instructor's communication skills.

LENGTH OF STUDY: 60 minutes

RISKS ANTICIPATED: No risks are anticipated

BENEFITS ANTICIPATED: Participants will be aware of variables that may enhance their listening comprehension skills to academic lectures.

EXTENT OF CONFIDENTIALITY: Identity of participants will be kept confidential and will not be linked to the data collected.

PARENTAL APPROVAL FOR MINORS: Only those individuals 18 years and over may participate.

TERMS OF PARTICIPATION: I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

Participant Name: _____

Participant Signature: _____ **Date:** _____

Witness to Signature:
(project staff) _____ **Date:** _____